May 11, 1948. W. A. RINGLER ET AL 2,441,445

METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

Filed April 12, 1943 7 Sheets-Sheet 1

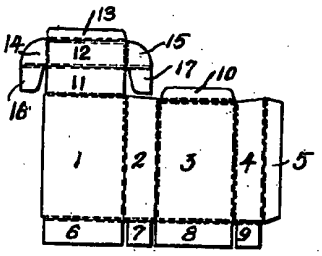


Fig.1.

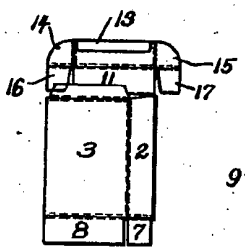


Fig.2.

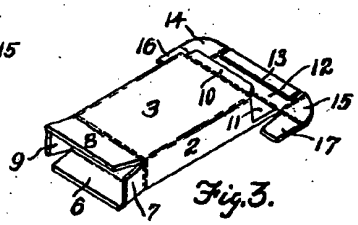


Fig.3.

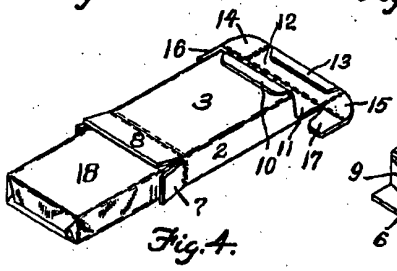


Fig.4.

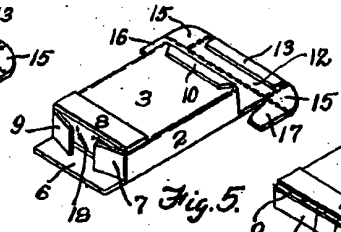


Fig.5.

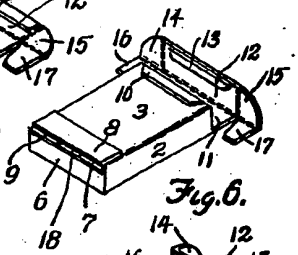


Fig.6.

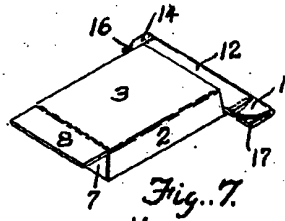


Fig.7.

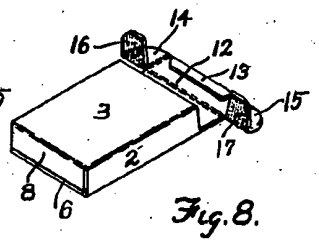


Fig.8.

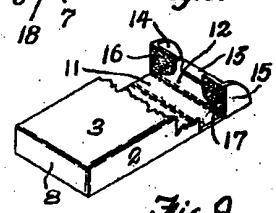


Fig.9.

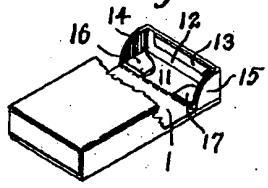


Fig.10.

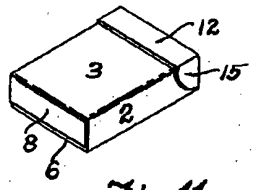


Fig.11.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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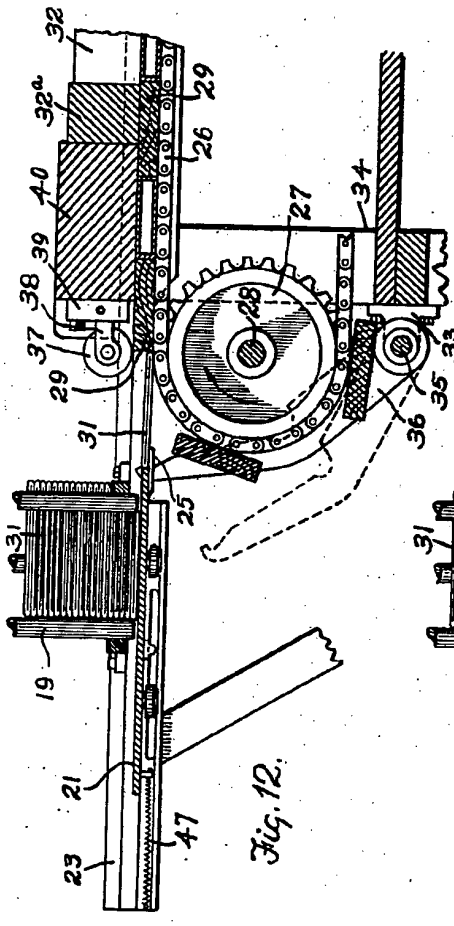


Fig. 12.

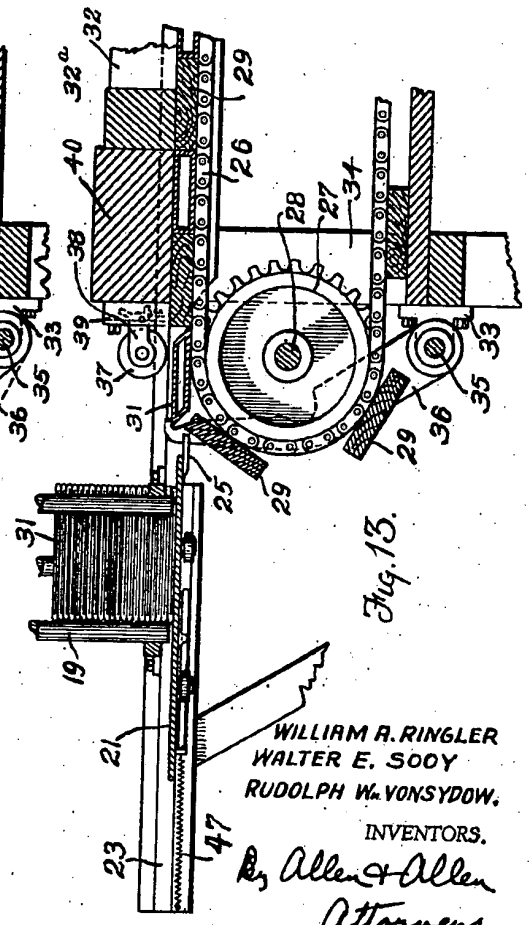


Fig. 13.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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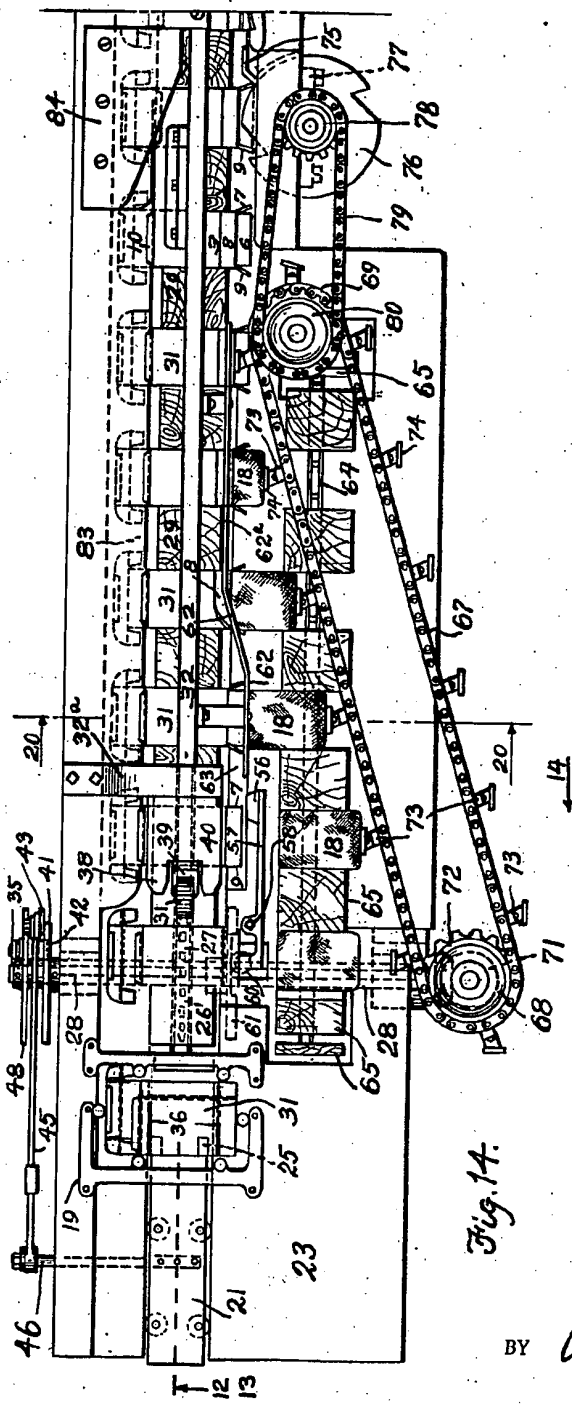

Fig. 14.

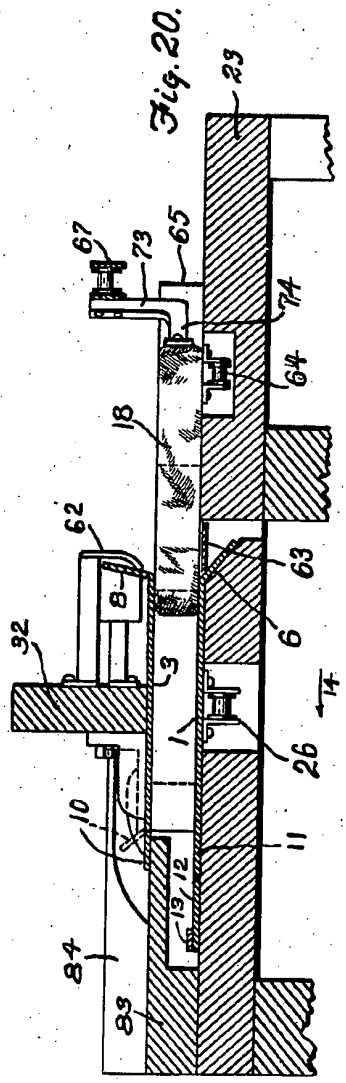

Fig. 20.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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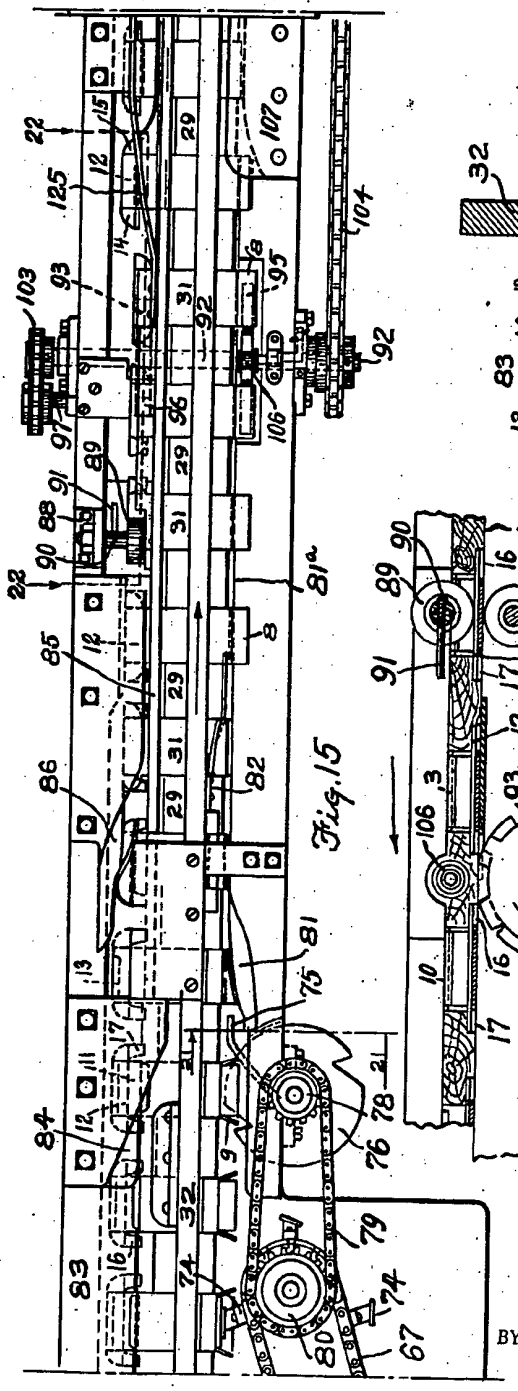

Fig. 15

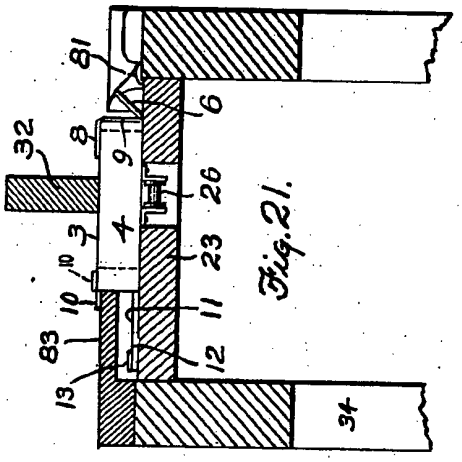

Fig. 21.

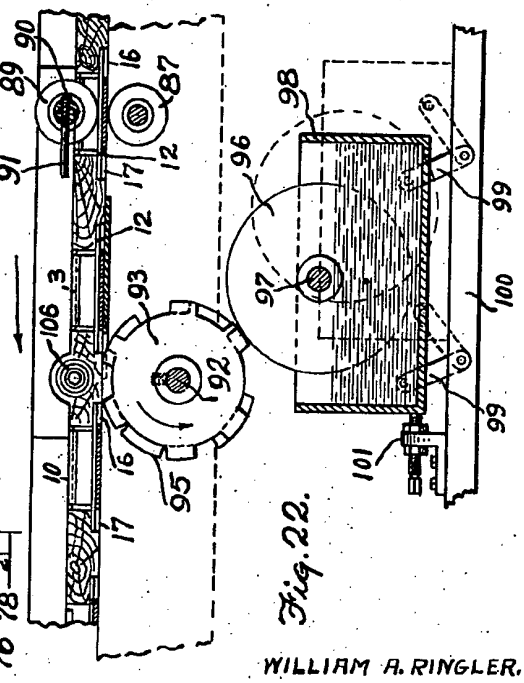

Fig. 22.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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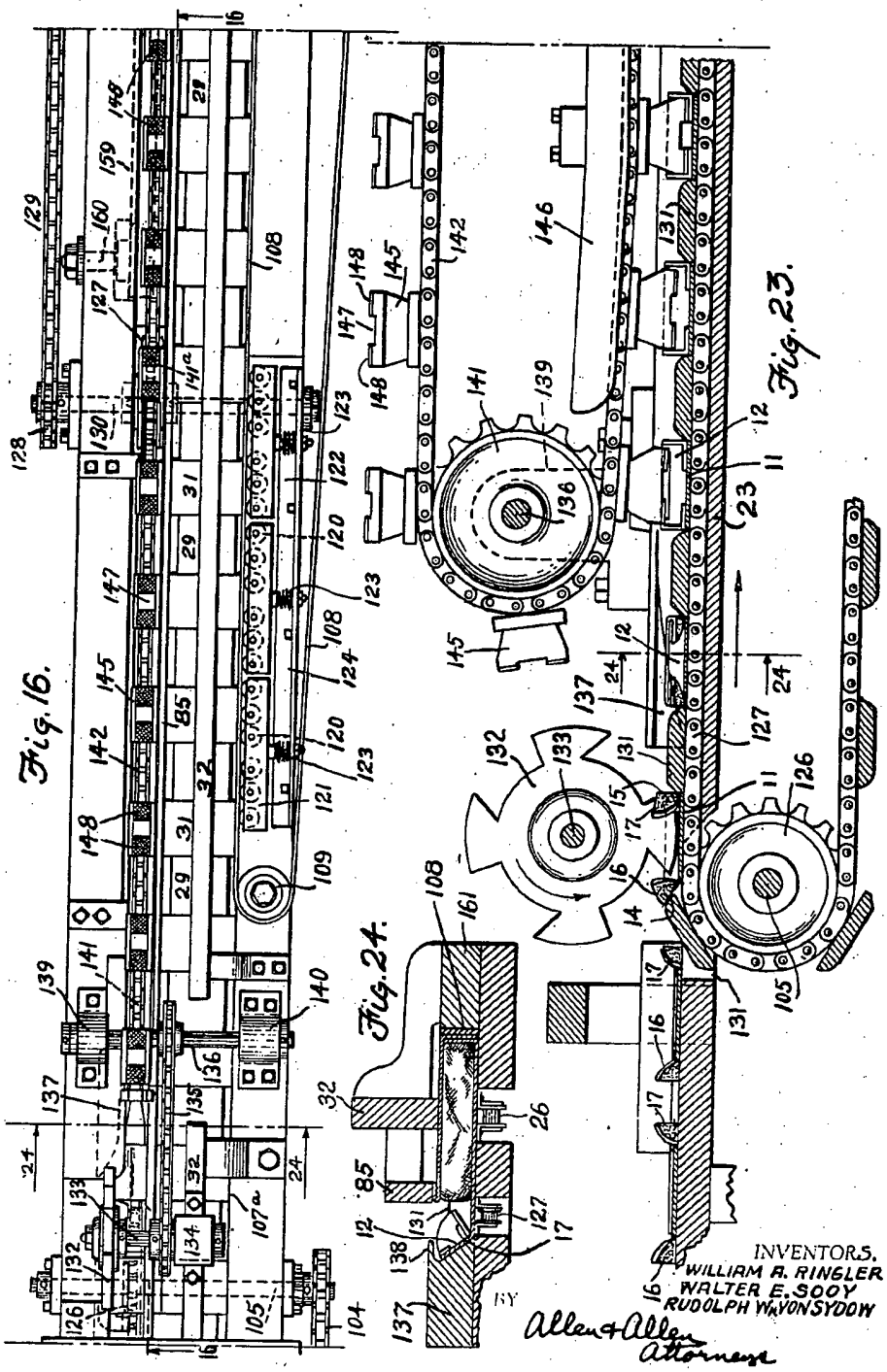

Fig. 16.



Fig. 23.



Fig. 24.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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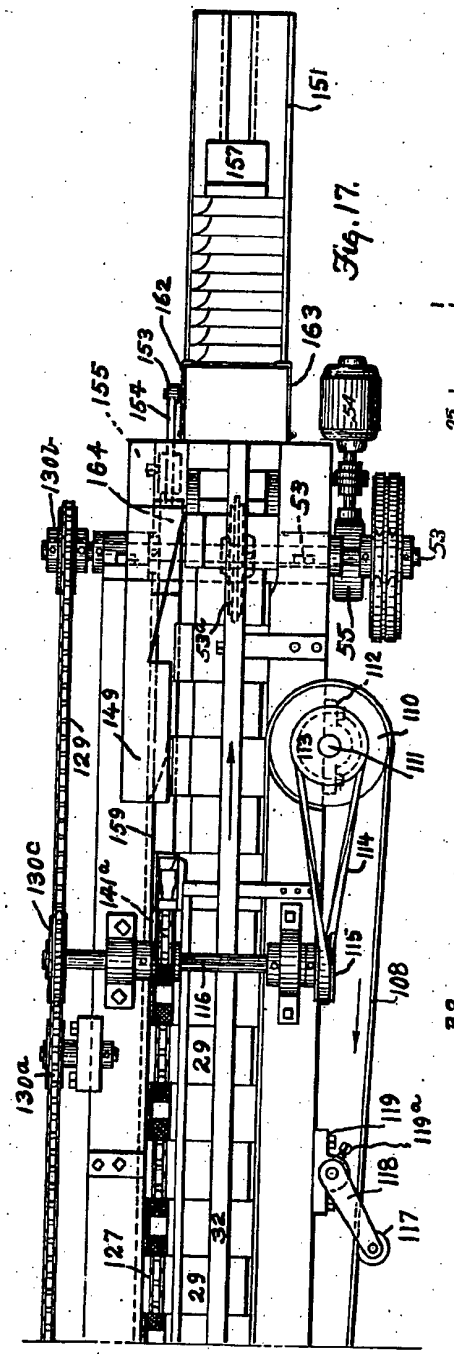

Fig. 17.

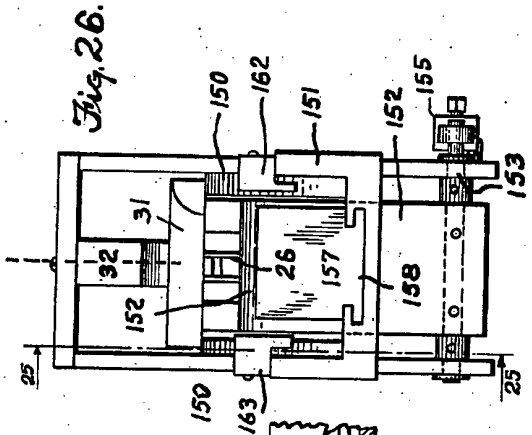

Fig. 26.

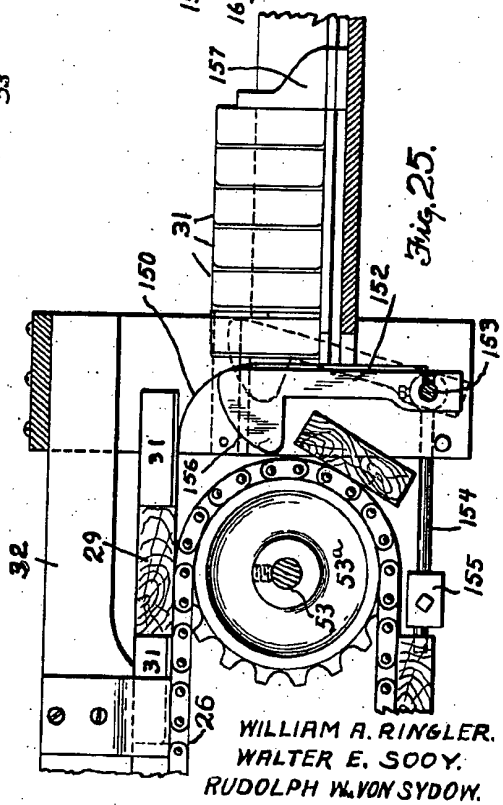

Fig. 25.

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METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

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Fig. 19.

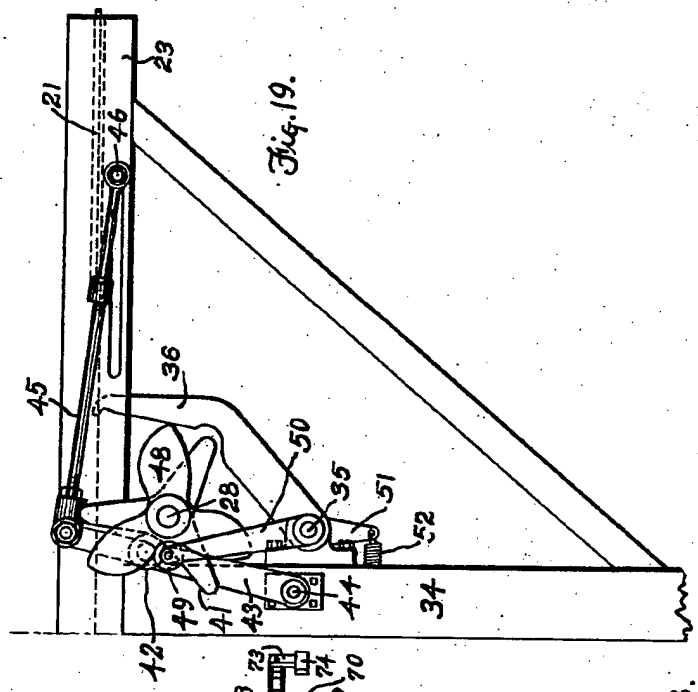
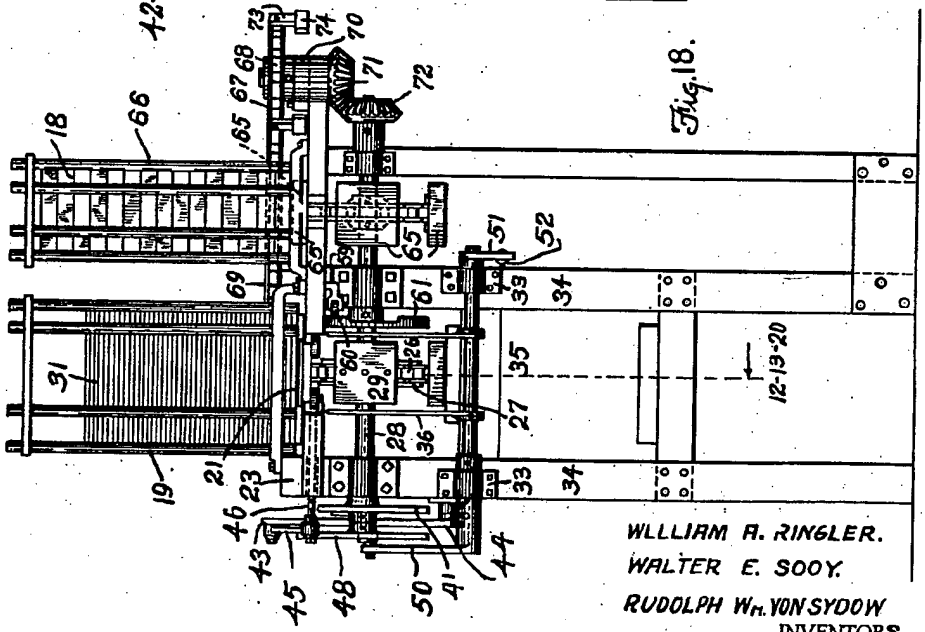



Fig. 18.

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Patented May 11, 1948 2,441,445

# UNITED STATES PATENT OFFICE

2,441,445

## METHOD AND MACHINE FOR FORMING AND FILLING RECLOSABLE CARTONS

William A. Ringler, Walter E. Sooy, and Rudolf W. von Sydow, Middletown, Ohio, assignors to The Gardner-Richardson Company, Middletown, Ohio, a corporation of Ohio

Application April 12, 1943, Serial No. 482,806

19 Claims. (Cl. 93—6)

1

Our invention has for its principal object the provision of a machine for forming up, filling and closing a type of boxboard carton for which the usual filling and sealing mechanism is not available. The carton itself is not herein claimed, but it will be described since an understanding of its nature is necessary to an understanding of the present invention. Generally characterized, it is a tubular carton having (preferably) at one end the usual seal end construction, but at the other a cover member, articulated to the body of the carton and swingable from a closed to an open position. When the cover is in closed position, coacting parts effect a retention of the cover in that position and offer a substantial resistance to the opening of the cover. The action is automatic, and the carton may be opened and closed indefinitely, within the wear-strength of the board from which it is made.

The exemplary carton employed for purposes of illustration herein is one intended for use as a pocket container for pipe and cigarette tobacco. It will be understood, however, that the carton may be given various sizes and shapes for a variety of uses. Various subcombinations of the apparatus and method herein disclosed may be employed in treating cartons of other types than the exemplary one, and in this event the body of the carton may be widely changed through a variety of known types, as well as the nature of the bottom end closure. Also our invention in some of its aspects is applicable to the formation of top end closures of modified type with or without the automatic feature mentioned above. Closures having the automatic feature will hereinafter be referred to for convenience as "click top" closures.

It is an object of our invention to provide means and a method for forming a click top closure on a carton.

It is an object of our invention to provide a means and method effective for erecting a carton, filling it, closing and sealing the bottom end, forming a click top structure, closing the top, and delivering the finished package, as a series of interconnected steps.

Since the formation of the click-top closure involves the making of a plurality of folds in a plurality of directions, it is an object of our invention to simplify the formation of these folds by mechanical means, and more particularly to correlate the operations so that the formation of certain folds is a factor in the formation of others, as will hereinafter be explained.

These and other objects of our invention, which

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will be later set forth or will be apparent to one skilled in the art upon reading these specifications, we accomplish by that certain construction and arrangement of parts and by that mode of operation, of which we shall now describe an exemplary embodiment. Reference is made to the drawings which form a part hereof and in which:

Figure 1 is a plan view of the blank for the exemplary carton.

Figure 2 is a plan view of the carton in tubed condition, i. e. in the form in which it may be delivered to our machine.

Figures 3 to 11 inclusive are perspective views of the carton showing the several operations performed by the machine.

Figure 12 is a partial sectional view showing the relationship of a feeder to a conveyor for the cartons.

Figure 13 is a similar view showing the action of erecting fingers which we prefer to provide.

Figures 14, 15, 16 and 17 are partial plan views taken along the length of the machine, to be taken together and in the order in which the figures are numbered.

Figure 18 is an elevational view of the entering portion of the machine.

Figure 19 is a fragmentary elevation showing cam mechanism for operating the carton feeder and erecting fingers.

Figure 20 is a transverse section taken along the line 20—20 of Figure 18, and showing mechanism concerned with the operation of feeding contents into cartons.

Figure 21 is a sectional view of the machine taken along the line 21—21 of Figure 15, and relating to the folding of bottom flaps.

Figure 22 is a section taken along the line 22—22 of Figure 15, and relating to a gluing operation.

Figure 23 is a longitudinal section on an enlarged scale taken of the portion of the machine shown at the left hand end of Figure 16.

Figure 24 is a section related to the line 24—24 of Figure 16.

Figure 25 is a partial, longitudinal sectional view of instrumentalities at the delivery end of the machine.

Figure 26 is a partial end elevation of the delivery end of the machine.

In the blank for the exemplary carton, as shown in Figure 1, four body walls 1, 2, 3 and 4 are articulated together by score lines shown as dotted lines. A glue flap 5 is articulated to the wall 4. At the lower ends of the body walls, there are sealing flaps of usual form, indicated at 6, 7, 8 and 9.

To the top of the front body wall 3 there is articulated a click flap 10, the function of which will hereinafter be described. To the top of the back body wall 1, there is articulated a cover top wall 11, to which, in turn, is articulated a cover front wall 12, bearing an abutment flap 13. Cover side walls 14 and 15 are articulated to the cover front wall 12; and these bear glue tabs 16 and 17 which are ultimately to be attached to the cover top wall 11.

The carton blank is manufactured in the usual fashion by providing boxboard, printing it as may be desired, and sending it through a cutting and scoring press. The completed blank, (as shown in Figure 1), may then be sent through the usual carton folding machine wherein it is tubed, i. e. folded on two of its longitudinal score lines, and its glue flap 5 attached to the wall 1. When this is done, the blank is in the flat form shown in Figure 2. By means of the same machine with a suitable attachment, or by means of a separate machine, we prefer to fold over the abutment flap 13 and glue it to the cover front wall 12. In this condition the collapsed cartons are shipped to the manufacturer of the goods to be packaged in them.

A consideration of the steps through which the carton passes in our machine will indicate our manner of operating upon the carton and will help in an understanding of the mechanism subsequently described. The first operation is that of erecting or squaring up the tubular carton, whereby it is brought into the condition shown in Figure 3. Next, the bottom end sealing flaps are spread apart sufficiently to be out of the way, and the contents are inserted into the erected carton body through its lower end. In Figure 4 a charge of tobacco previously wrapped in paper, as at 18, is shown being inserted as a unit into the carton. While this is being done, the click-flap 10 may be turned over outwardly so as to lie against the front wall 3.

When the charge of tobacco has been fully inserted, operations for closing the bottom of the carton are begun. In our operation, one of the longer sealing flaps 8 is bent over against the front wall 3 so as to get it out of the way, and the shorter sealing flaps are bent over as shown in Figure 5. The sealing flap 6 may then be bent upwardly against the sealing flaps 7 and 9 as shown in Figure 6. While this is being done, the cover front wall 12 is being bent upwardly carrying with it the cover side walls 14 and 15, which remain in the plane of the wall 12. This folding is continued as shown in Figure 7 until the wall 12 has been doubled over on its respective glue tabs 16 and 17. During this time also, the folding downwardly of the bottom sealing flap 8 may be begun. A glue application will be made not only to the glue flap 8 but to the under sides of the glue tabs 16 and 17, at the stage of carton folding illustrated in Figure 7.

Figure 8 illustrates a stage of the operation wherein the bottom glue flap 8 has been folded into final position, (whereby the bottom closure and seal is completed), and wherein the cover front wall 12 has been folded back again to its original position. It will be noted that the cover side walls 14 and 15 are still coplanar with the cover front wall 12. The result of the folding operation is to cause the glue tabs 16 and 17 to project upwardly at an angle to the plane of the remainder of the cover parts. This effect has been accomplished by folding means acting upon the cover front wall and the associated cover side walls 14 and 15, but not by mechanical means acting directly on the glue tabs 16 and 17. The operation is mechanically a simple one. We are thus able to leave our glue tabs 16 and 17 free for the application of glue, (which is indicated by stipple marks); but we avoid the necessity of moving folding means acting on the glue tabs. The reason why the glue tabs rise to the position shown in Figure 8 is that the board lacks complete resiliency, and when the cover side walls have been bent over into superposed relationship with the glue tabs (as in Fig. 7) and then bent back (as in Fig. 8), the glue tabs spring away somewhat from the cover side walls, but will not reassume a 180° relationship with them.



As a further consequence of this procedure and action, it will be seen that when the cover side walls 14 and 15 are bent upwardly with respect to the cover front wall 12 (as shown in Figure 9), the glue tabs 16 and 17 are caused to extend inwardly and toward each other, still without the necessity of folding means acting directly upon them. If now the cover front wall is bent upwardly with respect to the cover top wall 11, as shown in Figure 10, the various cover parts will assume their final relative relationship, with the glue tabs located inside the cover top wall. They may now be pressed against the cover top wall 11. It remains to close the cover as shown in Figure 11, whereupon the filled and closed carton is complete as such. Needless to say, it may be subsequently wrapped, as in Cellophane where this is desired; and in the packaging of tobacco products it will be usual to affix a revenue stamp in such manner that the stamp must be broken to open the cover of the carton.

With the carton in closed position as in Figure 11, the click-flap 10 lies inwardly against the cover front wall 12 and coplanar or substantially so with the abutment 13. Thus resistance is offered to the opening of the carton, for the click-flap 10 must swing upwardly until the abutment is released. In doing this, it depresses the upper edge of the front body wall 3 of the carton. The carton may have its cover opened and closed indefinitely and the click-top construction and operation is such that the cover, when closed, will always be held in closed position against accidental opening.

As hereinabove indicated, the cartons in the condition shown in Figure 2 are delivered to the machine of our invention and are placed in a feeder in stacked relationship. This feeder comprises a hopper 19 and a pusher plate 21 which is caused to oscillate in a base or bed 23 fastened to the frame of the machine, or forming part of it. The mounting of the pusher plate 21 may be any suitable one. It may, as shown in Figs. 12, 13 and 14, be mounted in a cutout in the bed 23, on rollers which ride in grooves in the sides of the cutout. The thickness of the pusher is not greater than the normal thickness of the folded blank of Figure 2. Pusher feeders as such are known in the art, and it will be readily understood that as the pusher is withdrawn to the left in Figure 12, so as to come out from beneath the stack of collapsed cartons, the stack will descend until the lowermost carton lies in the plane of the pusher. We prefer to attach to its forward end stop means 25 to prevent the trailing end of the carton blank from descending too far and possibly fouling on the fingers hereinafter described. Upon movement of the pusher to the right in Figure 12, the lowermost carton will be moved forwardly and thereby taken out of the

stack. The hopper 19 will keep the remainder of the cartons in the stack.

The cartons are moved through the machine in erected condition on a conveyor comprising belts, chains or other flexible moving means, with blocks spaced on the conveyor to accept the erected cartons in the spaces between. These blocks not only insure movement of the cartons through the machine, but also maintain them in erected condition. In Figures 12 and 13 we have shown a conveyor comprising a flight of chains 26 passing over sprockets 27 on a shaft 28. On the chains are affixed the series of blocks 29. It will be seen in the figures that erected cartons 30 are engaged between the blocks on the straight flight of the conveyor. As a collapsed carton 31 comes out of the stack under the influence of the pusher 21, the timing and the distance of travel of the pusher with respect to the blocks on the conveyor may be made such (by means of the shape of the operating cams hereinafter to be described) that it not only brings the carton 31 against the trailing edge of a block 29, but also pushes the carton ahead faster than the travel of the conveyor so as to accomplish a partial erection of the carton. In this way, the erection of the carton may be carried on by the combined action of the pusher and the block to such a degree that the leading edge of the next succeeding block, which at this time is traveling in an arcuate path about the sprockets 27, can engage the carton and, as it swings into the straight flight of the conveyor, can fully erect it and hold it against the preceding block.

As the erected cartons move along the conveyor, an overhead guide or hold down 32 maintains the cartons between the blocks.

While the operation just described is a mechanically simple one, various factors may affect it. One of these is the matter of change of dimensions of parts of the machine with humidity conditions, especially where such parts are made of wood. At a time when metals are largely unobtainable, we have been making our machines with the use of as much wood as possible, and have illustrated in our drawings a machine with large numbers of wooden parts. In the type of erecting operation just described dimensional changes in the blocks 29 tend to affect it in considerable measure, and we prefer the more positive action of erecting fingers and attendant mechanism which we will now describe. In suitable bearings 33 on uprights 34 of the machine frame we mount a shaft 35 and to this shaft we non-rotatably affix erecting fingers 36. The length of the blocks 29 is somewhat less than the length of the carton bodies so that the fingers 36 may contact the carton bodies off the ends of the blocks. In Figure 12, as the carton 31 is delivered into position to be engaged by the blocks, the spreader fingers 36 move upwardly from a position shown in dotted lines to the position shown in full lines. During the reverse movement of the pusher plate 21, as shown in Figure 3, the fingers 36 engage the carton 31 and by moving the trailing edge of it forwardly at a greater speed than the speed of travel of the blocks, erect the carton as indicated. During this operation the trailing edge of the carton is engaged in notches near the ends of the erecting fingers. On the end of the hold down 32 we prefer to mount a roller 37 in a resilient fashion so as to prevent the erected or partially erected cartons from moving upwardly so as to come out of engagement with the blocks and with the conveyor, and so as to insure that the erected cartons will ride properly under the end of the hold down 32. The roller 37 is pivoted on arms 38 which in turn are pivoted in bracket boxes 39 on the end of the hold down structure. Within the bracket box the arms 38 may be provided with a projection upon which a spring acts as shown, and may also be provided with another projection which, coming against an abutment prevents too great a descent of the roller 37. The hold down proper, 32, is held in position by a bracket or arm 32a, and the hold down roller may be mounted on a forward extension of this bracket as at 40. This extension, as indicated in Figure 14, may have projecting portions extending up to or beyond the roller 37 which also assist in introducing the cartons beneath the hold down 32.



The hold down 32, with some interruptions for the passage of shafts, extends substantially throughout the machine to the delivery end thereof, as can be seen from a consideration of Figures 15 to 17 inclusive.

For the operation of instrumentalities thus far described we attach certain cams to the driven shaft 28. The character of these cams will be best understood from Figure 19. A 3-pronged cam 41 acts upon a cam follower 42 on a lever 43 which is pivoted on a bracket 44 to the machine upright 34. The upper end of the lever 43 is connected by a linkage 45 to an arm 46 (for the arm see Figure 14) which is fastened to the pusher plate 21. To cause the cam follower 42 to follow the cam we may employ a spring 47 (shown in Figures 12 and 13) which connects the pusher plate with the end of the bed 23. We could of course employ a spring directly upon the lever 43, and in some instances we have employed, in addition to the pusher plate spring, a coil spring at the pivot 44. For the operation of the erecting fingers 36 we provide another cam 48 on the shaft 28. A cam follower 49 for this cam is affixed to a lever 50 which in turn is non-rotatably fastened to the erecter finger shaft 35. Another lever 51 also non-rotatably mounted on the shaft 35 is connected to the upright 34 by a tension spring 52 so as to cause the cam follower 49 to follow the cam 48.

The main conveyor chain or chains 26 extend to the exit end of the machine and return over a sprocket or sprockets on a shaft 53 mounted on the frame of the machine (see Figure 17). A motor 54, through a gear box 55 drives the conveyor. The conveyor chain 26, of course, drives the shaft 28 at the entering end of the machine.

As the cartons pass along the conveyor between the blocks, and beneath the hold down 32, the bottom end closure flaps are bent outwardly out of the way, as shown in Figure 4. A kicker 56 (Figure 14) is employed to knock forwardly the leading short bottom sealing flap 7. This kicker is mounted on one end of a lever 57, pivoted as at 58 on the machine frame, and having at its other end a depending arm 59. A cam follower roller 60 is mounted on the end of the arm, and coacts with a cam 61 mounted on the shaft 28. The lever 57 will be provided with spring means (not shown) to hold the cam follower against the cam. The kicker 56 has beveled sides as shown. The timing is such that the kicker rapidly moves toward the carton and its beveled front edge bends flap 7 forward. The kicker then stays between flaps 6 and 8 while the carton moves forwardly on the conveyor so

that its rear beveled edge can move backwardly the sealing flap 9.

Curved stationary sweeps move flaps 6 and 8 outwardly. The sweep for flap 8 is indicated at 62 in Figures 14 and 20, the latter figure showing how it may be supported from the central hold down 32. In this figure also the stationary sweep for flap 6 is indicated at 63. Sweep 62 is continued and configured until, as indicated in Figure 14 at 62a, it has bent flap 8 over onto the top wall 3 of the carton.

For filling the cartons, we provide in connection with the bed 23, another conveyor 64 (Figures 14 and 18) consisting of a chain or chains (or other flexible members) passing over a sprocket on shaft 23 and another spaced sprocket (not shown). This second conveyor bears spacers or blocks 65 between which the charges 18 may be engaged. A feeder having a hopper 66 is provided for these charges. Since there is in connection with this feeder no problem of erecting a carton, and since the charges 18 are of ample thickness, the blocks 65 themselves can act as pushers to withdraw the charges from the stack. The conveyor 64 moves with conveyor 26 so that the charges are maintained opposite the cartons into which they are to be introduced, while both are in motion.

As the charges 18 move along opposite the cartons, they are driven transversely to the conveyor 64 so as to introduce and push them into the cartons. This is preferably accomplished by providing pushers on a flight of chain 67 which runs diagonally of and above the conveyor 64. The chain 67 passes over sprockets 68 and 69. The stub shaft of sprocket 68 is journaled in a bearing 70 (Figure 18) on the bed 23. The shaft bears a bevel gear 71 meshing with another bevel gear 72 affixed to shaft 28. Thus the chain 67 is driven synchronously with chains 26 and 64. The stub shaft of sprocket 69 is provided with a similar bearing on the bed 23.

At intervals along the length of the chain 67, are depending arms 73 (Figures 14, 18 and 20) which carry rollers or flat pusher members 74, the latter being so disposed that they extend down between the blocks 65 so as to engage the charges 18. The charges are thus gradually introduced into the erected cartons while both are moving. If necessary the chain 67 may be supported throughout its working length.

We prefer to introduce the charges into the containers by the means and procedure just described. Other mechanisms may, however, be employed. We have, by way of example, employed a stepped pusher plate operating transversely to the conveyor 64 and so timed in its movements that the several steps of the plate effect successive movements of the charges 18 transversely to the conveyor 64 and into the cartons. As shown, the spaced relationship of conveyors 26 and 64 is such that when the blocks 65 no longer engage the charges 18 so as to move them longitudinally of the machine, the charges will have been introduced far enough into the cartons so that the cartons themselves will carry along the charges.

When the charge has been fully inserted into the carton, the operation of folding and gluing the bottom sealing flaps of the carton is begun. A stationary sweep 75 may be used to fold in the leading short sealing flap 7, as shown in Figures 14 and 15. We employ a kicker to fold forwardly the trailing short sealing flap 9 until



it can be engaged and folded to its final position by the same stationary sweep 75. An exemplary form of this mechanism comprises a notched, rotating disc 76. This is mounted on a stub shaft journaled as at 77 in bearing means which may be fastened to a side frame member of the machine. This shaft also bears a sprocket 78 which is driven by means of a chain 79 from a sprocket 80 on the stub shaft of sprocket 69 for conveyor 67. The notched parts of the disc 76 act as forward kickers on the trailing flap 9. To this end they must move faster than the travel of the cartons. The size of sprockets 78 and 80 and the spacing of the notches on the disc 76 as well as its size are apportioned to effect the desired speed of operation while maintaining the necessary timing.

In Figures 15 and 21 it may be seen how, just after the sweep 75 completes the folding in of the flaps 7 and 9, a sweep 81 folds the bottom sealing flap upwardly. A continuation of this sweep as at 81a maintains the folded condition of flaps 6, 7 and 9 to and through a point at which glue is applied to flap 8. In the travel of the carton as it approaches the glue application point, an overhead sweep or stationary folder (Figure 15) indicated at 82 folds the flap 8 down into vertical position so that it may receive the glue.

Meanwhile, a series of folding operations have been conducted on the top structure of the carton. From Figure 21 it will be clear how the top portion of the carton moves along over the bed 23 of the machine. A member 83 fastened to the machine bed may overlie the unfolded top construction of the carton and serve as an abutment to prevent endwise displacement of the cartons between the blocks 29 on the conveyor 26. A stationary sweep 84 may be employed to turn over the click-flap 10 onto the wall 3, and a suitable continuation of this sweep in the form of a hold down strip 85 may maintain the folded condition of flap 10 substantially throughout the length of the machine.

A stationary sweep 86 is next employed to fold over the cover front wall 12 onto the cover top wall 11 while folding over the cover side walls 14 and 15 onto the cover glue tabs 16 and 17 as heretofore explained in connection with Figures 6 and 7. Displacement of the glue tabs 16 and 17 is prevented because these tabs are riding along on the bed 23. A sword (not shown in the drawings) may be employed in order to enforce the bending of the boxboard along the line of articulation between cover walls 12 and 11 and between the cover side walls and their attached sealing tabs.

The action illustrated in Figure 8, we find, is facilitated by pressing the blank along the line of articulation just mentioned. To this end, at a point where the machine bed is interrupted, we mount a pressing roller 87 on the side frame of the machine, so that it may engage the blank from beneath, and in a bracket 88 we journal an upper pressing roller 89. One or both of these rollers may be spring pressed or, as detailed in Figures 15 and 22, the upper roller may be mounted eccentrically on a shaft 90 bolted into the bracket 88, while a handle 91 permits an adjustment of the position of the roller 89 which then can be fixed by means of the bolt.

At the glue application point a transverse shaft 92 is journaled. This shaft bears a glue applicator 93 with fixed or adjustable teeth so positioned as to apply glue to the glue tabs 16 and

17 without applying it to the intervening cover top wall 11. The shaft 92 also bears a glue applicator disc 95 positioned to apply a stripe of glue to the under side of the bottom sealing flap 8. Thus the application of glue is localized at one point in the machine.

A glue transfer roll 96 on a shaft 97 turns in a glue pot 98. This pot may have any suitable mounting together with any suitable heating means. It is convenient to mount the pot on pivoted arms 99 on a sub-base 100 supported on the machine frame. This permits swinging the pot to a position in which the glue transfer roll 96 contacts the glue applicators 93 and 95, and also to an open position as shown in dotted lines. An adjustable stop means 101 may be employed to determine the contact of the applicators and the transfer roll. Instead of a solid roll we may employ transfer discs, as will be clear, either in the same or in separate glue pots. In either event, we prefer to drive the shaft 97 from shaft 92 by means of a chain 103 or other suitable drive. The shaft 92 is itself driven by means of a chain 104 and suitable sprockets from another transverse shaft 105 (Figure 16) about which more will be said later.

In order to insure contact of the carton parts to which glue is to be applied and the glue applicators, we prefer to provide overhead hold down or presser rollers 106 at both ends of the carton. When the carton has left the glue application point in Figure 15 a stationary sweep 107 is employed to fold downwardly the bottom sealing flap 8 into final position. The package has now been filled and the bottom closure is complete except for pressing and holding it until the glue has set. A continuation of the sweep 107, as at 107a in Figure 16, maintains the final position of flap 8 until pressing means can be brought against it.

Considering these pressing means, they preferably comprise, first, a presser belt 108 (Figures 16 and 17). This belt passes over a tail sheave 109 journaled on the machine frame and a forward sheave 110 affixed to a stub shaft 111 journaled as at 112 on the frame of the machine. A sheave 113 also affixed to the stub shaft is driven by a belt 114 from a sheave 115 affixed to a transverse shaft 116 about which more will be said hereinafter. A belt tightener is preferably employed and may comprise a roller 117 mounted on an arm or arms 118 pivoted as at 119 on the frame of the machine and either acted on by a spring (not shown) or fixed in a belt tightening position by a set screw 119a.

The forward moving flight of belt 108 parallels the movement of the carton ends as the cartons are carried along by the blocks 29 on the conveyor 26. We prefer to provide throughout a portion at least of this flight of the belt a series of pressing elements. As shown, these may comprise small rollers 120 journaled in frames 121 which in turn are centrally pivoted to an angle iron or the like 122. This angle iron forms an abutment on the machine frame, and compression springs 123 engage between it and the frames 121. This gives a presser construction which nevertheless is flexible and is capable of accommodating itself to irregularities of travel in the operating flight of belt 108.

The remaining operations to be performed on the top part of the carton are those operations illustrated in Figures 8 to 11 inclusive. In the first of these operations the cover front wall 12 and its associated cover side walls 14 and 15 are folded



back again into a position coplanar with the cover top wall 11. This is accomplished by means of a stationary sweep indicated at 125 at the right hand end of Figure 15. This sweep has, of course, an outward and downward configuration as respects the cartons and the result of the folding operation is to bring the carton top into the condition shown in Figure 8 where the glue tabs 16 and 17 on the cover side walls 14 and 15 are caused to extend upwardly, although they have not been contacted by folding instrumentalities. The next operation will be that of bringing about the condition shown in Figure 9, for which purpose we employ a series of instrumentalities next to be described. As shown in Figures 16 and 23 on the transverse shaft 105 we mount a sprocket 126 which is the tail sprocket for another longitudinal chain 127, the upper flight of which rides along in a groove on the machine bed 23 in a position underlying the cover parts of the cartons. The chain 127 returns over a sprocket affixed to a shaft 130 (Figure 16). This shaft bears a sprocket 128 engaging a chain 129 passing over a sprocket 130b (Figure 17) on the main drive shaft 53 of the machine. It will be clear that the chain 127 is thus driven from the motor 54.

The chain 127 carries spaced blocks 131 arranged to travel synchronously with blocks 29 of the main conveyor 26. The blocks 131 are arranged to lie between the top portions of successive cartons on the conveyor. The blocks have beveled edges and their movement around the sprocket 126 as well as their positioning on the straight flight of the chain 127 is such as to cause an upward bending of the cover side walls 14 and 15 if the cover front wall 12 is depressed between the blocks. This action will be clear from Figure 23. For depressing the cover front wall 12 between the blocks 131 we provide an appropriately shaped and appropriately timed rotating star wheel 132. This wheel is mounted on a shaft 133 which may be journaled as at 134 (Figure 16) in a bearing member affixed to a bracket on the machine frame or affixed to a supported end of the hold down 32. The shaft 133 has a chain and sprocket drive (including the chain 135) from a shaft 136 which will hereinafter be described.

The result of depressing the cover front wall 12 between the blocks 131 is to turn up the cover side walls 14 and 15. This produces an inward disposition of the glue tabs 16 and 17 (as shown in Figure 9), still without the necessity of contacting these glue tabs with folding instrumentalities. The next step is the bringing of the carton top into the condition shown in Figure 10. This is accomplished by folding upwardly the cover front wall 12. A stationary sweep 137 performs this action. The sweep preferably has a ledge or overhang 138 (Figure 24) which prevents the cover top wall 11 from rising upwardly, and obviates the use of a sword. The bending of the cover front wall 12 upwardly, as in Figure 10, results in positioning the glue tabs 16 and 17 on top of and against the cover top wall 11 while the bocks 131 still act to prevent spreading of the cover end walls 14 and 15. To insure adherence of the glue tabs to the cover top wall they must now be pressed and held thereagainst. This is accomplished by means coming down from above and traveling with the cartons, engaging glue tabs 16 and 17 and pressing them against the cover top wall 11 which in turn is supported from beneath by the chain 127.

A shaft 136 is mounted in bearing members 139 and 140 which rise considerably above the

plane of the machine bed. The shaft 136 bears a sprocket 141 about which travels a longitudinal chain 142 paralleling the chain 127. This chain 142 returns over a sprocket 141a (Figure 17) near the forward end of the machine, the sprocket 141a being secured to a shaft 116. The chain 129 passes partially around the underside of a sprocket 130c, mounted on the outer end of shaft 116, the chain being held in driving contact with the sprocket 130c by an idler sprocket 130d, the axial center of this idler sprocket being on or near the horizontal axial plane of shaft 116, the chain 129 passing over the upper periphery of sprocket 130d and passing onto sprocket 128 and thence returning to sprocket 130b, furnishing driving power to shafts 130, 136, 105, 116 and 92.

The chain 142 bears presser blocks 145. When the carton tops have been brought into the condition shown in Figure 10 these presser blocks swing into position within the carton tops and, gradually descending, press glue tabs 16 and 17 against the wall 11. The gradual descend of the blocks 145 after they have swung around the sprocket 141 is accomplished by the provision of a pressure trackway 146 for the chain 142. The trailing end of this trackway tapers upwardly as shown in Figure 23. We have found it preferable to relieve the presser blocks 145 centrally as at 147 so as to confine their pressure to the glue tabs 16 and 17. Also we prefer, where the presser blocks are made of wood to line the operating surfaces thereof with metal as at 148. The length of travel of chain 142 in the machine is chosen in such manner that positive adhesion between the glue tabs 16 and 17 and the cover top wall 11 will have been achieved by the time the chain 142 returns around its forward sprocket 141a.

The final operation is the closing of the lid of the package. This may be accomplished by means of a final stationary sweep 149.

While other forms of delivery or stacking means may be employed, we have devised a simple and advantageous one the characteristics of which will be apparent from Figures 17, 25 and 26. On the end of the machine frame we have fastened a pair of carton engagement means or trackways 150 which are thin panel-like members, one on each side of the blocks 29 of the main conveyor and so shaped as to remove the filled and closed cartons from between the blocks and deliver them on edge at a slightly lower level than the top flight of the main conveyor 28. The members 150 are enabled to exert this action on the cartons because, as hereinabove explained, the blocks 29 are slightly shorter than the cartons themselves. The cartons are delivered in an on-edge position to a slide hopper 151 extending from the end of the machine. In order to move the stack of cartons forwardly so that a space will be provided at its rear into which the next carton can drop, we employ a pusher member 152 which is fixed on a shaft 153, which permits pivotal movement of the pusher. The shaft is journaled in uprights at the end of the machine. Urging the shaft counterclockwise so that the pusher can assume the position shown in solid lines in Figure 25, we provide the shaft 153 with a rigid arm 154, extending rearwardly of the machine, on which a weight 155 is preferably adjustably mounted. The upper end of the pusher is given a cam shaped contour at 156 as shown in Figure 25. When the pusher is in the position shown in solid lines, the delivery trackways 150 deliver the carton to the slide beyond the pusher. But as the block 29 on the main conveyor swings around the sprocket 53a, it contacts the cam surface 156 thereby moving the pusher into the position shown in dotted lines in Figure 25. This is a position in which the block 29 can clear the pusher; but it is also a position requiring forward movement of the stack of cartons in the slide or hopper by at least the thickness of one of the cartons. We also provide on the uprights a pair of thin, steel spring fingers 162 and 163. These are shaped and positioned to be deflected by a filled carton during the forward movement of the stack as pushed by the pusher 152 and then to spring into position behind the last carton to prevent retrograde movement of the stack.

As soon as the block has cleared the cam surface, the weight 155 returns the pusher to the position shown in solid lines. In order to maintain the forward end of the stack we provide abutment means 157 which are slidable in a rabbeted groove 158 in the bottom of the slide. When a sufficient number of filled and closed cartons accumulates in the slide, the operator removes them or a portion of them, thereafter moving the abutment 157 to the left in Figure 17.

The guide 146 on the overhead chain 142 may be given a resilient mounting whereby it is spring pressed downwardly. The under chain 127 which bears the blocks operating to erect the cover side walls may be terminated before the presser chain 142 and the carton top wall 11 may thereafter be supported for pressing by means of a belt 159 overlying and sliding along the bed 23. This belt may be driven by a pulley 164 fixed on the shaft 53 and may return over another pulley on a stub shaft as at 160 in Figure 16. In place of the pressing members 121 we may in instances employ wooden blocks or strips 161 (Figure 24) either solidly mounted on the machine bed or resiliently mounted thereon. We have illustrated our machine in the form in which it is currently being made by us with available materials; but in the light of our teachings herein there may obviously be changes in design in the adaptation of more suitable metal members.

Modifications may be made in our invention without departing from the spirit of it.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. A method of forming end closures on cartons having a tubular body and an end closure having a top wall, a front wall articulated to the top wall, side walls articulated to the ends of the front wall and glue tabs articulated to the side walls, said method comprising folding through a substantial angle said front and side walls with respect to the remainder of said parts, then folding them back substantially to original position whereby said glue tabs are brought upwardly with respect to said top wall, then folding said side walls with respect to said front wall whereby said glue tabs are brought inwardly toward each other, and folding said front wall with respect to said top wall, whereby to position said glue tabs flatwise against said top wall.

2. The process claimed in claim 1 including the step of applying adhesive to said glue tabs prior to moving said glue tabs with respect to said top wall.

3. The process claimed in claim 1 in which said steps are carried on while the cartons are in continuous motion.

4. A method of forming end closures on cartons having a tubular body and an end closure having a

top wall, a front wall articulated to the top wall, side walls articulated to the ends of the front wall and glue tabs articulated to the side walls, said method comprising folding through a substantial angle said front and side walls with respect to the remainder of said parts, then folding them back substantially to original position whereby said glue tabs are brought upwardly with respect to said top wall, then folding said side walls with respect to said front wall whereby said glue tabs are brought inwardly toward each other, and folding said front wall with respect to said top wall, whereby to position said glue tabs flatwise against said top wall, adhesive having been applied between said top wall and said glue tabs, and pressing said glue tabs against said top wall, afterward folding said top wall over with respect to said tubular body whereby to move said end closure to closed position.

5. A method of forming and filling cartons of a type having a tubular body, an end closure at one end having a top wall, a front wall articulated to said top wall, side walls articulated to the ends of said front wall, and glue tabs articulated to said side walls, and seal end flaps on the other end of said body, said method comprising squaring up the tubular body, moving it in a path, folding through a substantial angle said front and side walls with respect to the remainder of said parts, applying adhesive to said glue tabs, bending said front and side walls back through a substantial angle whereby said glue tabs are caused to be angularly related to said top wall, bending said side walls with respect to said front wall whereby said glue tabs are brought inwardly toward each other, folding said front wall with respect to said side walls whereby to position said glue tabs flatwise against said top wall, and pressing said glue tabs against said top wall, and concurrently with some at least of the aforesaid operations on the carton conducting another series of operations thereon comprising spreading said seal end flaps, introducing contents into said body, folding and sealing said seal end flaps, an adhesive being applied to at least one of them, and pressing the end seal.

6. The method of claim 5 in which the said steps are so correlated that the application of adhesive at both ends of the carton occurs at the same point of the carton's path of travel.

7. The method of forming a three dimensional structure from a carton blank part in which two main walls are articulated to each other, side walls are articulated to one of said main walls, and tabs are articulated to said side walls, and in which said tabs must be positioned by a two-directional movement against one of said main walls, said method comprising folding said main walls relative to each other in one direction, then in another, then again in the first direction, with an intermediate folding of the side walls, whereby to position said tabs as aforesaid without folding them, and solely by the folding of other parts.

8. A method of folding carton blanks which includes the steps of folding in one direction certain parts which are articulated together, with respect to other parts articulated to the first mentioned parts but not to each other, and then reversing the folding of said first mentioned parts with respect to less than all of said other parts whereby to produce differences in the angularity of said other parts to said first mentioned parts.

9. In a machine for folding cartons which have main walls articulated together, side walls articulated to the ends of one of said main walls, and



tabs articulated to said side walls, means for folding over through a substantial angle one of said main walls and the side walls articulated thereto with reference to the others of said parts, means for reversing the said fold through a substantial angle whereby to change the angularity of said tabs to said unfolded main wall, means for folding said side walls to a substantially normal relationship with the main wall to which they are articulated, and means for folding said main wall to substantially a right angular relationship with the other main wall, whereby to position said tabs substantially in face to face relationship with said other main wall.

10. The apparatus claimed in claim 9 including means to apply adhesive to said tabs, and means for pressing said tabs against said other main wall.

11. Apparatus for forming and filling cartons of a type having a tubular body, an end closure at one end having a top wall, a front wall articulated to said top wall, side walls articulated to the ends of said front wall, and glue tabs articulated to said side walls, and seal end flaps on the other end of said body, said apparatus comprising means for moving a carton in a path with its body in squared-up condition, means for folding through a substantial angle said front and side walls with respect to the remainder of said parts, means for applying adhesive to said glue tabs, means for bending said front and side walls back through a substantial angle whereby said glue tabs are caused to be angularly related to said top wall, means for bending said side walls with respect to said front wall whereby said glue tabs are brought inwardly toward each other, means for folding said front wall with respect to said side walls whereby to position said glue tabs flatwise against said top wall, means for spreading said seal end flaps, means for introducing contents into said body, means for applying adhesive to one of said seal end flaps, and means for folding and pressing said seal end flaps.

12. Apparatus claimed in claim 11 wherein the means for moving the carton comprises a flexible conveyor, and abutment means on said conveyor between which said carton body is held, the carton being positioned on said conveyor with its body transverse thereto so that the end closures on said body project at each side of said conveyor.

13. Apparatus claimed in claim 11 wherein the means for moving the carton comprises a flexible conveyor, and abutment means on said conveyor between which said carton body is held, the carton being positioned on said conveyor with its body transverse thereto so that the end closures on said body project at each side of said conveyor, and wherein the means for pressing said glue tabs is means borne by a traveling conveyor and brought thereby into active position, in which said means for folding said side walls comprises means traveling on a conveyor and brought thereby into active position, and in which the means for folding the leading and trailing seal end flaps is a moving means, the remainder of the folding means in said apparatus being stationary folding means.

14. In a machine for forming cartons of a type having a tubular body, an end closure having a top wall, a front wall articulated to said top wall, side walls articulated to the ends of said front wall and glue tabs articulated to said side walls, means for moving the carton in a path with its body in squared-up condition, means for fold-

ing said front and side walls with respect to the remainder of said parts, means for applying adhesive to said glue tabs, means for bending said front and side walls back through a substantial angle whereby said glue tabs are caused to be angularly related to said top wall, means for bending said side walls with respect to said front wall whereby said glue tabs are brought inwardly toward each other, means for folding said front wall with respect to said side walls whereby to position said glue tabs flatwise against said top wall, and means for pressing said glue tabs against said top wall.

15. In a machine for forming cartons of a type having a tubular body, an end closure having a top wall, a front wall articulated to the top wall, side walls articulated to the front wall and glue tabs articulated to the side walls, a conveyor, means on said conveyor to engage erected carton bodies and move them in spaced relation, said bodies extending transversely to said conveyor, stationary folding means for folding over said front wall and the associated side walls, means for applying glue to said glue tabs, stationary means for folding said front wall and side walls back, means for folding said side walls with respect to said front wall, said means comprising a conveyor paralleling said first conveyor, and abutment means on said second conveyor for rising between adjacent cartons and folding a closure side wall of each, stationary means for folding said front wall with respect to said top wall, and means for pressing said glue tabs against said top wall, said last mentioned means comprising a third conveyor paralleling the first, and bearing blocks adapted to enter between said side walls and accomplish said pressing against an opposed support.

16. Apparatus claimed in claim 15 including means acting to depress said closure front wall respecting said abutment means, and being movable to permit the passage of said abutment means.

17. Apparatus claimed in claim 15 including stationary means for folding said top wall with respect to said body whereby to close the completed closure.

18. Apparatus claimed in claim 15 including



stationary means for folding said top wall with respect to said body whereby to close the completed closure, and including means for filling said carton bodies, said last mentioned means comprising a fourth conveyor paralleling the first, means on said fourth conveyor for moving contents charges parallel to and opposite the bodies of the cartons, and means operating transversely to said fourth conveyor for pushing said charges into said bodies.

19. Apparatus claimed in claim 15 including stationary means for folding said top wall with respect to said body whereby to close the completed closure, and including means for filling said carton bodies, said last mentioned means comprising a fourth conveyor paralleling the first, means on said fourth conveyor for moving contents charges parallel to and opposite the bodies of the cartons, and means operating transversely to said fourth conveyor for pushing said charges into said bodies, said bodies having seal end flaps at the end through which they are filled, and said mechanism including means for spreading said flaps prior to filling, and means for folding and sealing said flaps after the filling operation.

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Fig. 1

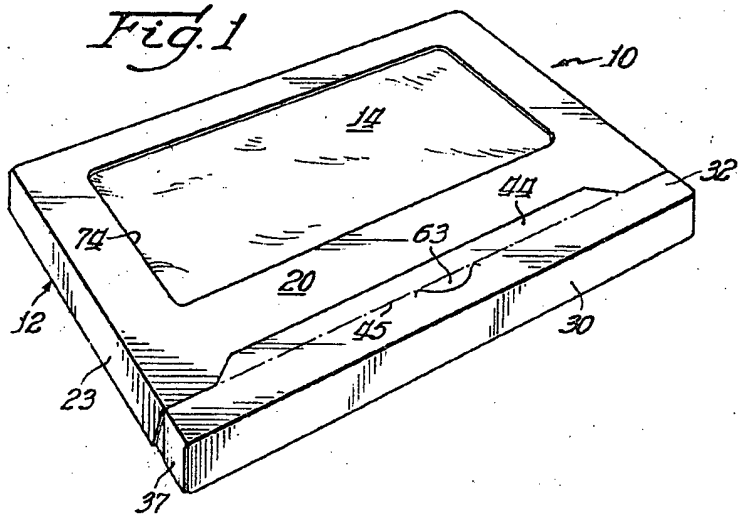


Fig. 2

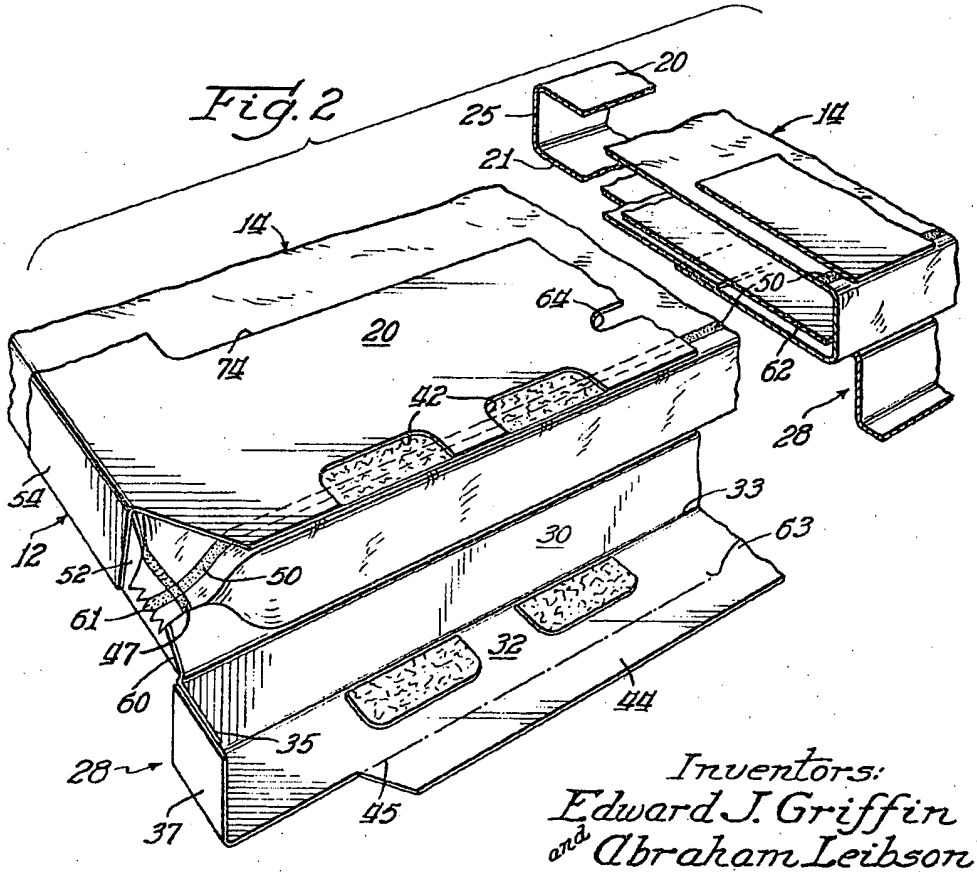


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Fig. 3

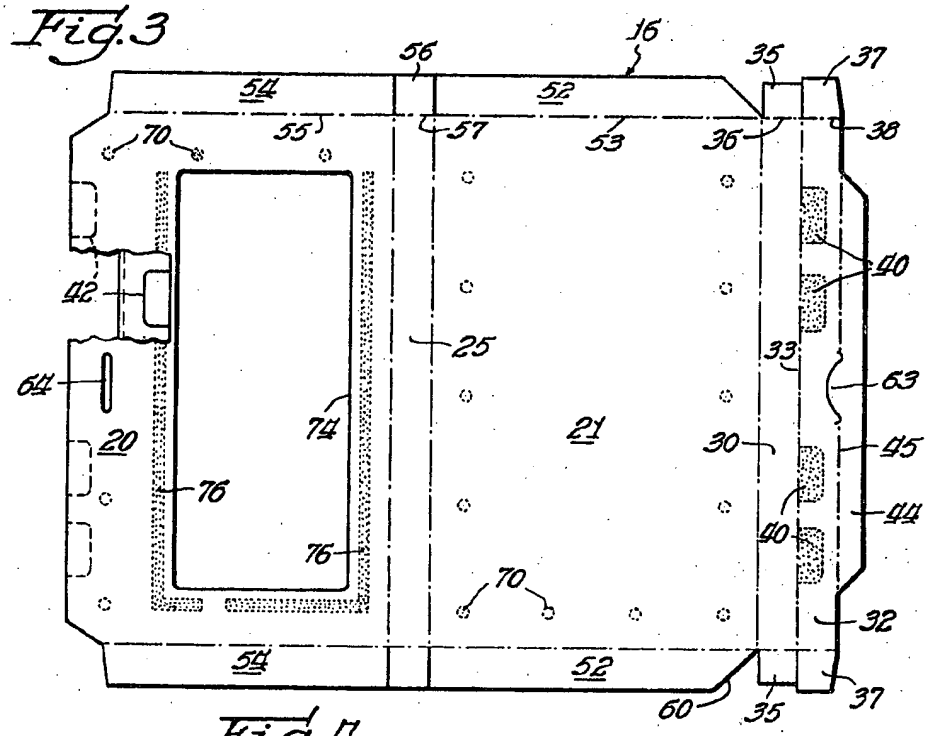



Fig. 4

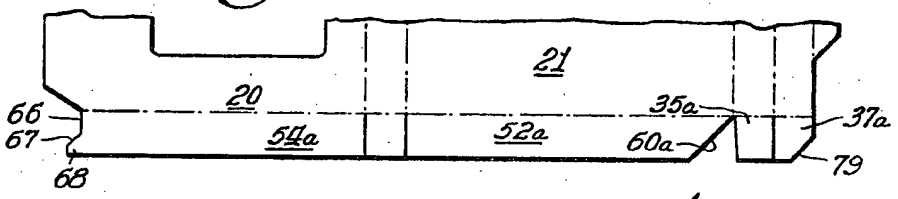



Fig. 5

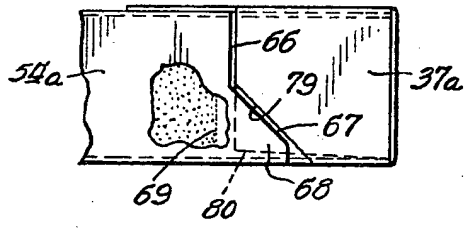
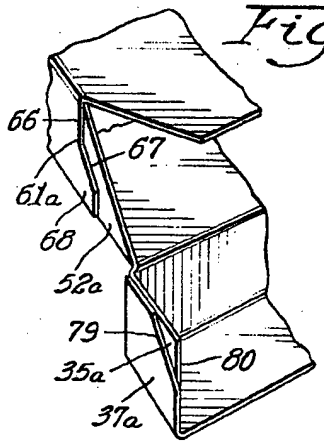



Fig. 6



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# FOOD PACKAGE

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Int. Cl. B65d 17/20, 5/08

## ABSTRACT OF THE DISCLOSURE

A food package comprises a paperboard body having opposed front and rear walls, opposed end walls, a bottom wall, and a top closure, hingedly interconnected to one another at corresponding adjacent edges. A plastic pouch, suitable for confining a product, is disposed within the body, the pouch being in a form of a tube having its opposite ends sealed. A tear strip is provided in the pouch and located in the portion of the pouch which is adjacent the top of the body so that the tear strip is readily accessible when the top is opened. The top of the body has a closure flap which overlaps a portion of the front wall and is releasably secured thereto.

This invention relates to a food package having an outer body of paperboard and an inner pouch of film and to such a package having an easy opening and readily reclosable construction. More particularly, this invention relates to a food package suitable to be readily filled with product, vacuum drawn or gas flushed, and sealed closed.

This invention includes the combination of a tubular paperboard body and a tubular plastic film pouch within the body. The plastic pouch has a tear strip extending the length of the tubular structure between the opposite ends. The opposite ends of the tubular pouch are sealed closed, and the paperboard body has end flaps which are closed over the end seams of the pouch and thereby close the package. The paperboard body has its lapped manufacturer's panel which can be ripped away to expose the tear strip, which in turn is used to sever the pouch for opening it. The package is reclosed by closing and locking in place the lap panel of the paperboard body. The package is readily adapted for vacuum or gas flush type sealing, since the product can be loaded into the package through corresponding open or unsealed ends of the pouch and body, the required vacuum or gas flush sealing operation can be performed on the pouch, and thereafter the body can be closed and sealed at said end. Vacuum or gas flush type packages help preserve the flavor of the product for longer periods than other type packages.

Accordingly, an object of this invention is to provide an improved lined package having an inner pouch that completely encloses the product and has a tear strip, and an outer paperboard body around the pouch that is opened adjacent the tear strip.

A more specific object of this invention is to provide a hood construction for the paperboard body which upon being opened automatically exposes the end of the tear strip for said pouch to provide for the ready opening of the package.

Another object of this invention is to provide a lined food package which is suitable for the vacuum or gas flushed confinement of the product.

These and other objects will be more fully appreciated after referring to the following specification, including as a part thereof, the accompanying drawings, wherein:

FIG. 1 is a perspective view of a food package made according to the teachings of the subject invention;



FIG. 2 is a perspective view of the same package shown in FIG. 1, except with the package being partly opened and broken away to show the details of construction more clearly;

FIG. 3 is a top plan view as seen from the inside of the package of a paperboard blank suitably cut and scored to define the body section of the subject package;

FIG. 4 is a top plan view of a portion of an alternate blank construction;

FIG. 5 is an end elevational view of the package formed with the blank shown in FIG. 4; and

FIG. 6 is a perspective view showing the same hood construction in the opened position.

A package **10**, suitable for bacon for example, having one embodiment of the subject invention is disclosed in FIGS. 1 and 2, and includes a paperboard body **12** and a plastic film pouch **14**. The body **12** is formed from a blank **16** (see FIG. 3) having a plurality of panels hinged together on generally parallel hinged lines to define, which appropriately folded and secured to one another, and enclosure surrounding the pouch. The body thus has opposed front and rear walls **20** and **21**, respectively, opposed end walls **23**, and a bottom wall **25** connected together at corresponding adjacent edges. A closure **28** is provided for the open top of the body and includes a top wall **30** hinged to the body rear wall **21** and an outer front wall panel **32** hinged to the top wall **30** about score line **33**. Flaps **35** and **37** are hinged above score lines **36** and **38**, respectively, to the side edges of the top wall and outer front wall panel and are overlapped and secured together to make a hood-like closure.

The outer front wall or lap panel **32** overlies and is separably secured to the front wall **20** in the carton closed position (see FIG. 1) to define the manufacturer's joint for the tubular body. Preferably, adhesive patterns **40** are located at spaced intervals along the length of the carton beneath the lap panel **32**, and each pattern of adhesive is completely surrounded by a cut line **42** extending partially through the paperboard blank. This permits a shearing or delamination of the paperboard beyond the cut lines. To assist in opening the body closure **28**, a lift panel **44** is hinged about score line **45** to the lower edge of the outer front wall panel **32**.

The pouch **14** is disposed within the body enclosure **12** and is in the form of a tube of plastic disposed with its longitudinal axis extending through and between the body end walls **23**. The otherwise opened ends of the film pouch are sealed closed along seams **47** which are disposed adjacent the body end walls. A tear strip **50** is adhered internally to the pouch **14** and extends between the seams **47** at the opposite ends thereof. Preferably, the tear strip is formed of an oriented strip of plastic that is compatible to and is thus integrally heat sealed to the pouch plastic.

The opposite body end walls **23** are formed by overlapping inner and outer flaps **52** and **54** hinged on score lines **53** and **55**, respectively, to the rear and front body walls. A minor flap **56** is further hinged about score **57** to the bottom wall **25** and underlies both major flaps **52** and **54**. The major end flaps **52** and **54** are full and continuous for almost the full height of the carton, except for the top edges thereof, and the top edge **60** of the inner flap **52** is cut away on a sloping angle from a point adjacent the bottom edge of the outer front wall panel **32** to the top of the rear wall **21**. The overlying outer end wall flap **54** is cut away completely at this location to provide only a single thickness of end wall.

The pouch is designed to fit within the body in a manner with the ends of its tear strip **50** being disposed in adjacent approximately overlying relationship to the inner end wall flap **54** (see FIG. 2). Upon opening the

body closure **28**, the end **61** of the tear strip **50** is exposed to permit it to be grasped and drawn in a direction across the pouch to open the pouch by severing it with and along the tear strip. The product such as bacon strips, can then be withdrawn from the open top of the pouch by sliding therefrom the pad **62** upon which the product is typically positioned.

The package **10** can be reclosed by folding the closure forwardly about the top wall hinge line and overlying the outer front wall panel on the front wall **20**. To hold the closure in this position, a tab **63**, formed as an integral extension of the lift panel **44** and extending beyond the hinge connection **45** between the lift panel and the lap panel **32**, is adapted to be fitted into an opening **64** in the front wall.

The pouch is secured to the body at only spaced locations, such as at the various dots **70** of adhesive shown on the blank in FIG. 3 near the edges of the major front or rear panels. This holds the pouch to these panels at only these locations and permits minor shifting of the pouch within the body as is sometimes necessary during the vacuum or gas flushing sealing operation used in this package. Along these lines, the pouch **14** is formed of an air impervious film to prevent or retard the fusion of air or gases.

To aid in the display of the product, a window opening **74** is provided in the front wall **20** which thereby exposes the pouch therebeneath. The pouch is of a transparent material to afford product visibility. The pouch is adhered to the front wall in the area of the window opening by discontinuous strips **76** of adhesive disposed adjacent the window opening **74**. Since the pouch is secured to the blank at spaced locations only, there is little likelihood of trapping air in the form of bubbles between them when they are initially secured together. Generally, the pouch will be secured as a tubular, open ended element to the flat paperboard blank, which in turn is folded and secured over the pouch as a tubular open ended sleeve.

FIGS. 4, 5 and 6 show an alternate embodiment of the body construction used in the package. The embodiment differs in the cooperation of the closure flaps **35***a* and **37***a* relative to the end wall flaps **52***a* and **54***a*. Thus, the inner end wall flap **52***a* is cut away along its top edge **60***a* in a manner similar to the previous embodiment, but the top edge **61***a* of the outer end wall has a horizontal section **66** extending part way across the width of the end wall and an upwardly inclining section **67** that defines thereby a tab **68**. The tab **68** is not adhesively secured to the inner flap **52** but the adhesive between the flaps terminates along a line **69** shown in section in FIG. 5. The outer hood closure flap **37***a* similarly has its opposite free end cut away along line **79** to complement the sloping exterior edge of the tab **68**. The tab **80** defined by the projection of the inner closure flap **35***a* beyond the trimmed outer closure flap **37***a* thus can be inserted beneath the tab **68** to provide a sure as well as neat reclosure for the subject package.

What is claimed is:

**1.** A food package, comprising the combination of:

(a) a paperboard body having opposed front and rear walls, opposed end walls and a bottom wall, hingedly connected to one another at corresponding adjacent edges;

(b) a plastic film pouch, suitable for confining the product, disposed within the body;

(c) said pouch being in the form of a tube having its opposite open ends sealed along seams that are adjacent the body end walls;

(d) a tear strip for the pouch formed of an oriented strip of plastic adhered to the pouch and extending between the end seams of the pouch adjacent the open top of the body;

(e) said pouch and said body being held together by adhesive applied between the pouch and at least one of the front and rear walls;



(f) a closure for the open top of the body, including a top wall hinged to the body rear wall and an outer front wall panel hinged to the top wall and overlapping the body front wall;

(g) said closure further including flaps hinged to the side edges of the top wall and outer front wall panel and overlapping and being adhesively secured to one another;

(h) said outer front wall panel being separably secured along a local pattern of bonding to the body front wall;

(i) said front wall including a cut line extending partially through and continuously around the bonding pattern;

(j) a lift panel hinged to the lower edge of the outer front wall panel and being separated from the underlying body front wall;

(k) said package being opened by pulling on the lift panel to separate the outer front wall panel from the front wall for opening the package, and the pouch then being opened by severing it along the tear strip;

(l) said lift panel having a tab extension coplanar therewith that is cut from the front wall outer panel and adapted to be inserted into an opening in the underlying front wall upon reclosing the closure for locking it closed.

**2.** A package according to claim **1**, wherein the pouch is adapted to be evacuated of the air therein and charged with an atmosphere that is different from ambient before both end seams are sealed, and wherein thereafter said product is exposed only to the atmosphere until the pouch is opened by said tear strip.

**3.** A package according to claim **1**, wherein the front wall has therein an opening spaced inwardly of its hinged connections to the end and bottom walls and spaced inwardly of the lift panel operable to provide display of the pouch and the bacon therein, and wherein the pouch and the body are held together by strips of adhesive disposed immediately adjacent the top and bottom edges of the display opening.

**4.** A package according to claim **1**, wherein each of the end walls includes outer and inner panels hinged, respectively, to the front and rear walls and overlapping one another and being secured together, the inner end wall panel being cut away on a diagonal from the hinge connection between the rear and top walls to the lower edge of the outer front panel and the outer end wall panel being cut away from this same lower edge location adjacent the front wall, said closure flaps being disposed in this area in substantially coplanar relationship to the outer end wall panel when the package is closed.

**5.** A package according to claim **4**, wherein the outer end wall panel extends upwardly and rearwardly from the lower edge location adjacent the front wall and is free from connection to the inner end wall panel in this area to permit the closure flaps to be tucked between the outer and inner end wall panels to reclose the package.

**6.** A package according to claim **4**, wherein the end of the tear strip is folded over the inner end wall panel and is confined thereagainst by the closure flaps, and is exposed upon separating the closure from the body.

**7.** A food package, comprising the combination of:

(a) a paperboard body having opposed front and rear walls, opposed end walls and a bottom wall, hingedly connected to one another at corresponding adjacent edges;

(b) a plastic film pouch, suitable for confining a product, disposed within the body;

(c) said pouch being in the form of a tube having its opposite open ends sealed along seams that are adjacent the body end walls;

(d) a tear strip for the pouch formed of a strip of plastic adhered to the pouch and extending between the end seams of the pouch and located adjacent the

top of the body to be readily accessible when the top is opened;

(e) said pouch and said body being held together by adhesive applied between the pouch and at least one of the walls;

(f) a closure for the open top of the body, including a top wall hinged to the body rear wall and an outer front wall panel hinged to the top wall and overlapping the body front wall;

(g) said outer front wall panel being separably secured to the body front wall;

(h) said package being opened by separating the outer-front wall panel from the front wall thereby opening the top of the body and exposing the tear strip in the pouch, and severing the pouch along the tear strip.

8. A food package, comprising the combination of:

(a) a paperboard body having opposed front and rear walls, opposed end walls, and a bottom wall, hingedly connected to one another at corresponding adjacent edges so that the front wall has one free edge;

(b) a plastic film pouch, suitable for confining the product, disposed within the body and extending beyond said free edge of the front wall toward the top of the body;

(c) said pouch being in the form of a tube having its opposite open ends sealed along seams that are adjacent the body end walls;

(d) a tear strip in the pouch extending between the end seams thereof and located adjacent the top of the body to be readily accessible when the top is opened;

(e) a top closure panel for the body and hinged to the body rear wall to overlap a marginal portion of the front wall and to be releasably secured thereto;



(f) said package being opened by separating the top closure panel from the front wall thereby exposing said tear strip, and by severing the pouch along and with said tear strip.

9. A package according to claim 8, wherein the tear strip is formed of a strip of plastic and is adhered to the pouch between the end seams thereof.

10. A package according to claim 8, wherein a lift panel is hinged to the top closure panel and is free from connection to the underlying front wall suitable to provide a gripping area for easy separation of the top closure panel and front wall.

11. A package according to claim 8, wherein the pouch is air-tight upon the sealing of the end seams, and wherein the pouch is adapted to be evacuated of the air confined therein and charged with an atmosphere different from ambient before the end seams are sealed.


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DAVIS T. MOORHEAD, *Primary Examiner.*

U.S. Cl. X.R.

99—171, 174; 206—45.31; 229—44, 51

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# United States Patent [19]

Stone

[11] Patent Number: 5,314,114

[45] Date of Patent: * May 24, 1994

[54] **FLIP-TOP RECLOSEABLE CARTON WITH POSITIVE CLOSURE ARRANGEMENT**

[75] Inventor: **James L. Stone**, Grand Rapids, Mich.

[73] Assignee: **Packaging Corporation of America**, Evanston, Ill.

[*] Notice: The portion of the term of this patent subsequent to Oct. 13, 2009 has been disclaimed.

[21] Appl. No.: **990,602**

[22] Filed: **Dec. 14, 1992**

[51] **Int. Cl.**[5] ..... **B65D 5/54**; B65D 5/56

[52] **U.S. Cl.** ..... **229/225**; 220/416; 229/160.1; 493/95; 493/907

[58] **Field of Search** ..... 229/224, 225, 226, 160.1; 206/268, 273; 220/416, 418, 441, 443, 461, 462, 463; 493/93, 95-97, 217, 906, 907

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*Primary Examiner*—Gary E. Elkins
*Attorney, Agent, or Firm*—Arnold, White & Durkee

[57] **ABSTRACT**

A flip-top recloseable carton is provided in the form of a six-sided parallelopiped enclosure having opposing top and bottom walls, front and back walls, and side walls formed from corresponding panels and flaps defined on a unitary, continuous paperboard blank. The outer layers of the side walls and the front wall are provided with horizontal tear-strip sections which form an integral and continuous tear strip that permits a user to open the carton from its sealed form. Repeated closing and positive locking of the carton is realized by use of a die-cut portion on the inner layer of the front wall which includes a proximal flap and an island portion dispersed in forcibly displaceable mutual engagement. Once the engaging flap and island portion are disengaged forcibly by opening the carton lid, reclosing thereof leads to snap re-engagement of the flap and island elements accompanied by positive tactile and audible feedback indicative of effective carton closure.

**15 Claims, 4 Drawing Sheets**

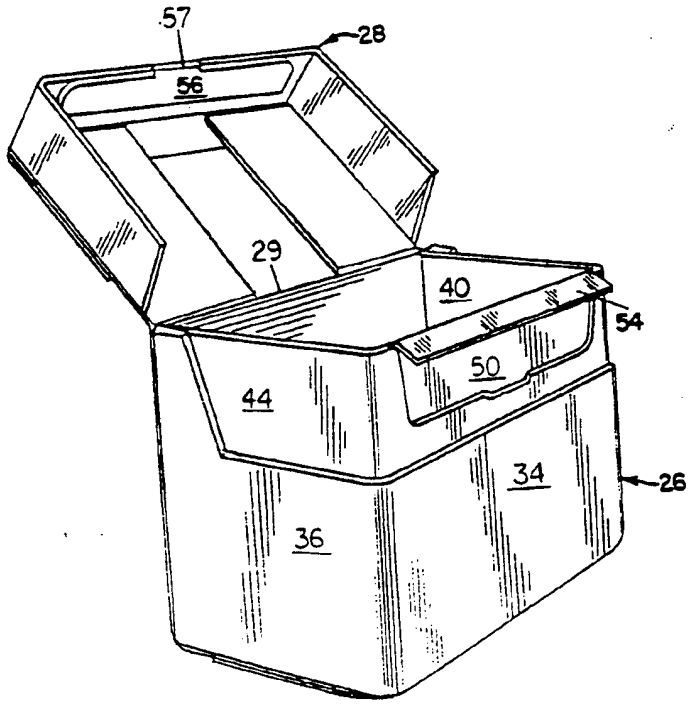
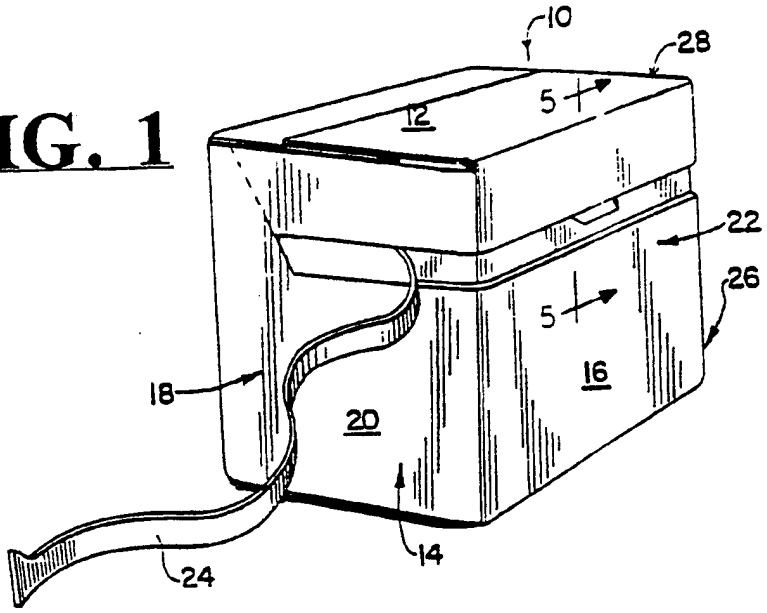


FIG. 1



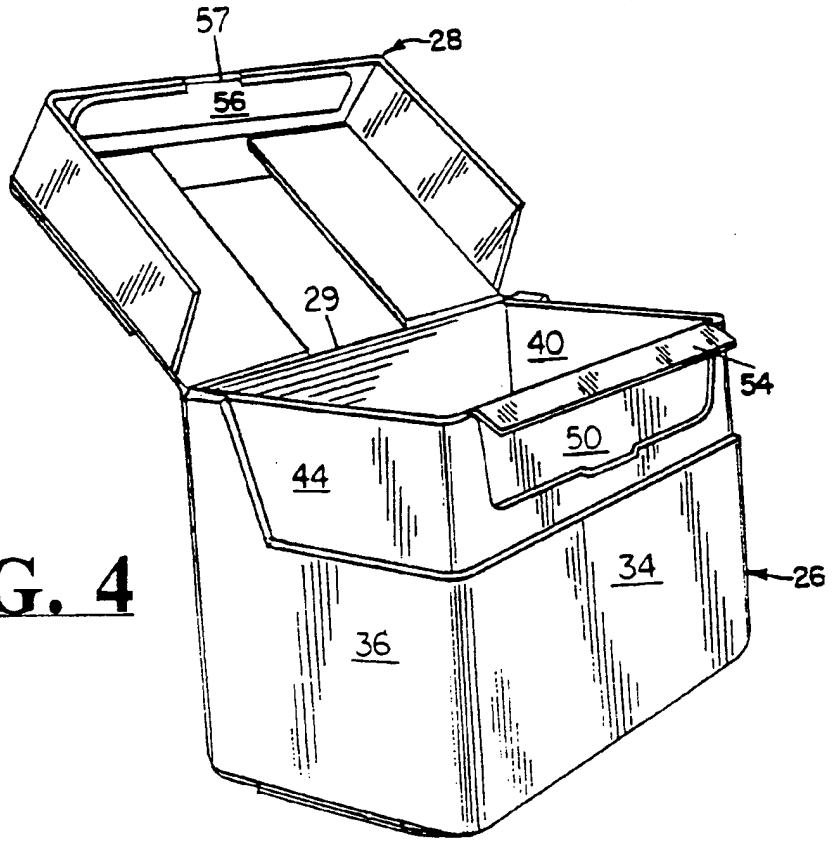




FIG. 4

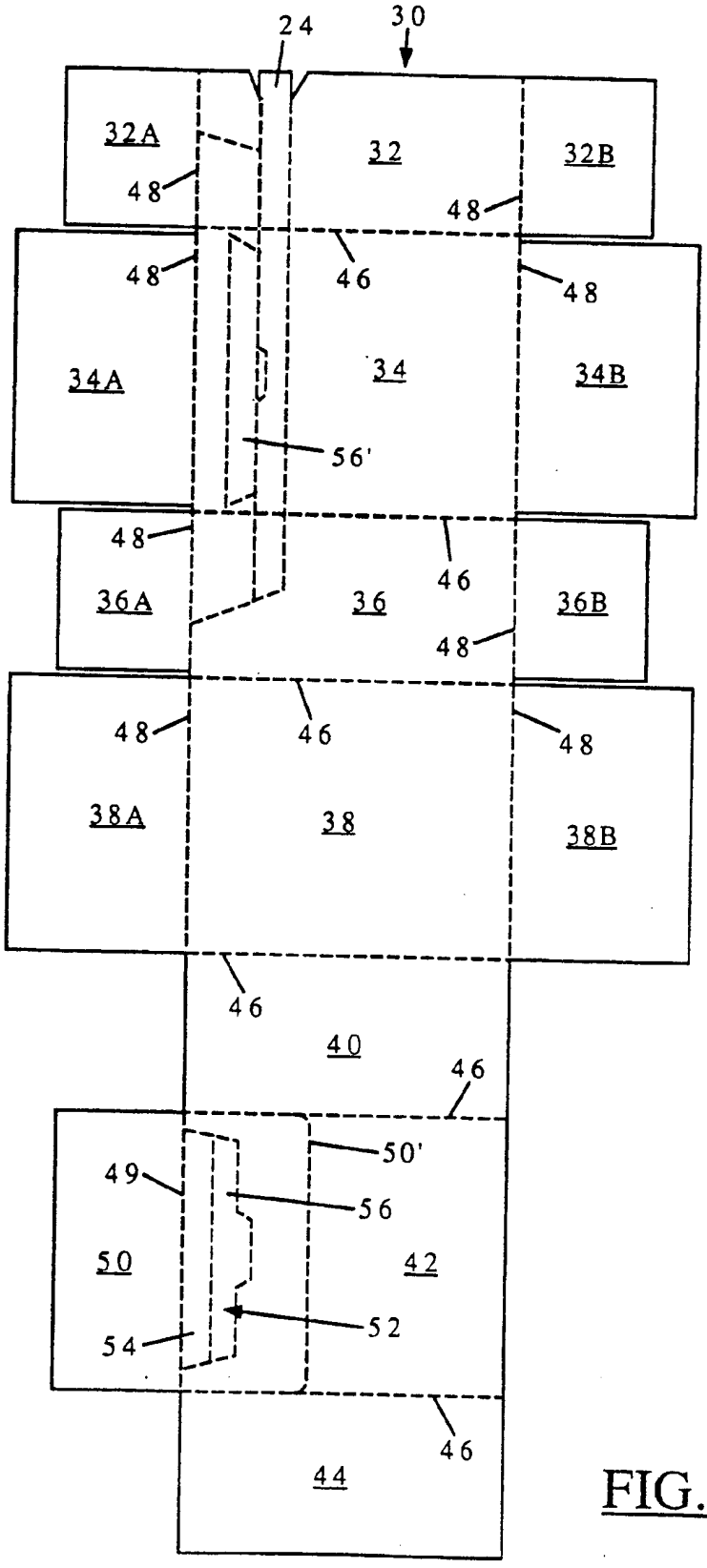

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FIG. 2

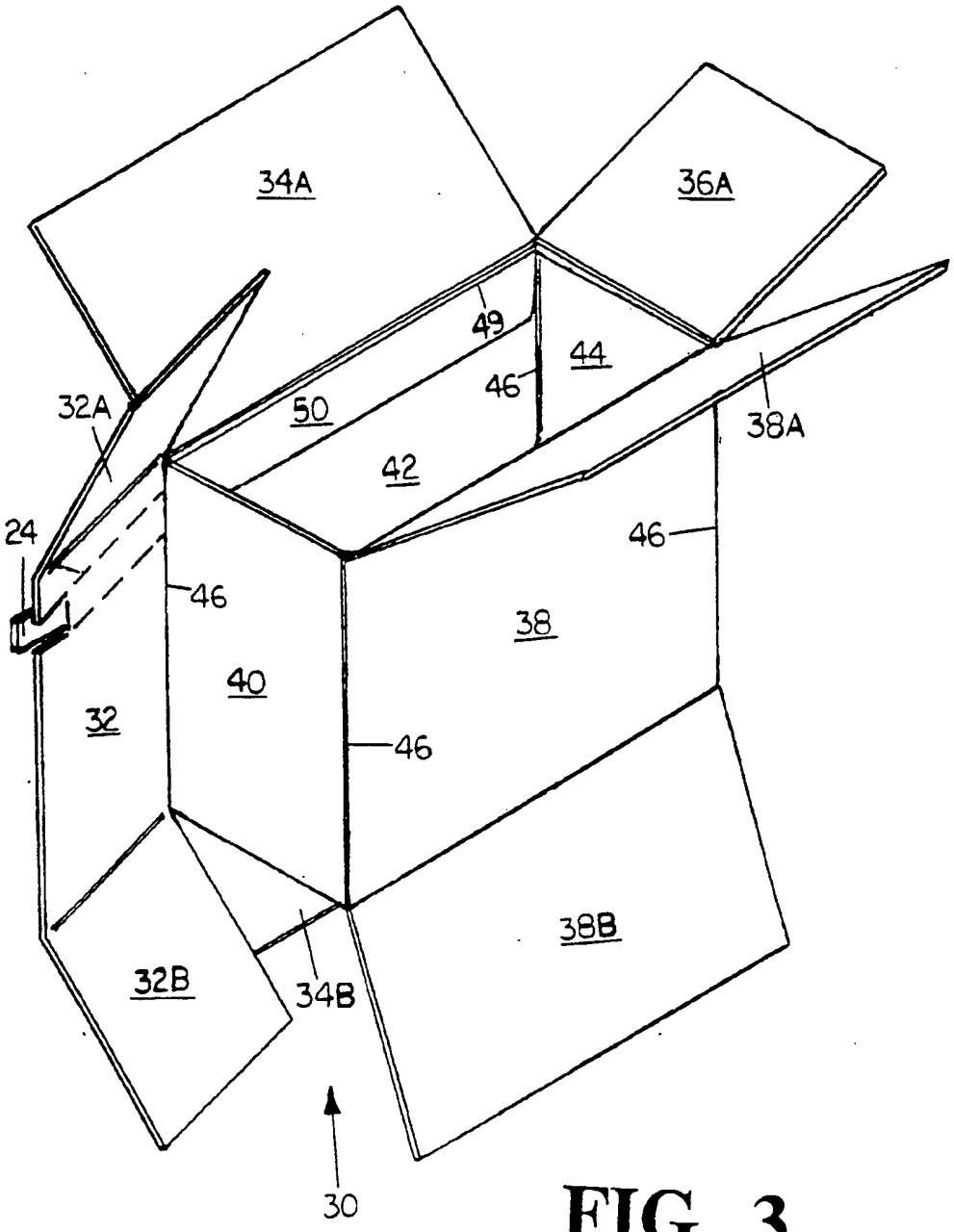



FIG. 3

FIG. 5

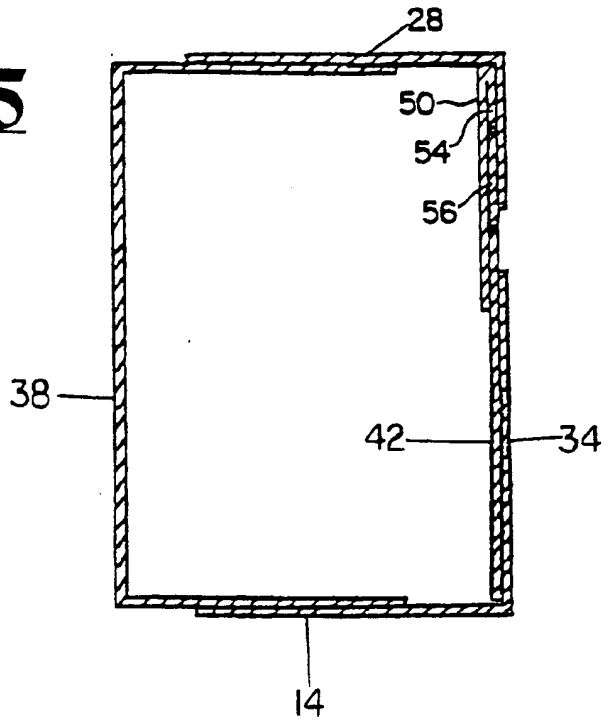
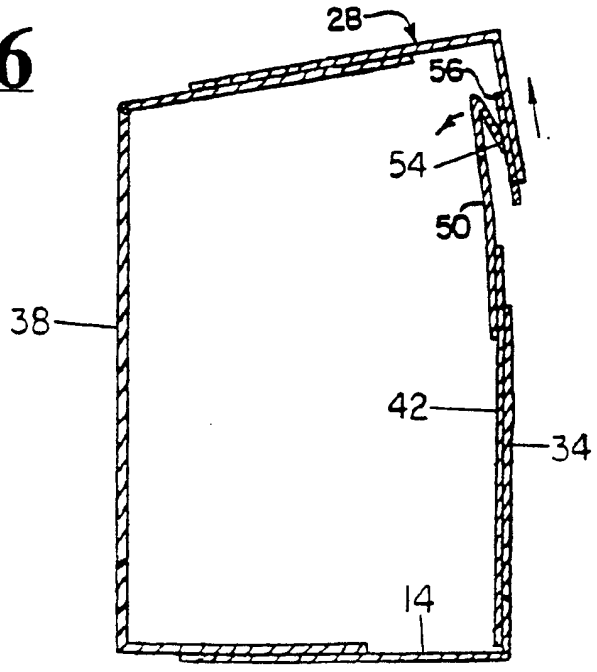



FIG. 6



# FLIP-TOP RECLOSEABLE CARTON WITH POSITIVE CLOSURE ARRANGEMENT

## FIELD OF THE INVENTION

The present invention relates generally to paperboard cartons or like containers. More specifically, the present invention relates to recloseable paperboard cartons which can store powdered or granular materials.

## BACKGROUND OF THE INVENTION

Paperboard cartons are typically formed from rolls of paperboard which are cut into "blanks." Score lines are scribed between sections of a blank to divide the blank into rectangular sections and to facilitate folding of these sections with respect to one another. In forming a carton from the blank, a top, side, or bottom panel of the carton is initially left unsealed so that the carton may be filled with a product through the unsealed panel. Different equipment is typically used to fill the carton, depending on the panel which is left unsealed; "side-fill" equipment is used to fill a carton with an unsealed side panel, "top-fill" equipment is used to fill a carton with an unsealed top panel, and "bottom-fill" equipment is used to fill a carton with an unsealed bottom panel Once the carton is filled with a product, the carton is sealed and the filled carton is ready to be sold to a consumer.

With respect to powdered detergent applications, most detergent companies use "top-fill" equipment or "bottom-fill" equipment to fill powdered detergent into cartons prior to sealing the cartons. In order for a detergent carton design to be compatible with existing filling equipment, it is advantageous for the detergent carton to be constructed with the appropriate panel left unsealed so that the carton may be filled through the carton top or bottom.

In a variety of consumer packaging applications, not only is it advantageous to supply cartons or containers which are compatible with typical industry "filling" equipment, but it is also important to supply cartons which are capable of being conveniently, yet securely, opened and reclosed repeatedly. The ability to be repeatedly opened and closed down in a lockable manner is particularly important where the carton is used for storage of granular or powdered material, such as laundry detergent powder.

An exemplary recloseable carton design uses a carton lid which hingedly attaches to a back panel of a carton base. An integral tear strip is generally used to permit the opening of a carton which has been packed with the appropriate material and subsequently sealed. The lid is separated from the base by removing the tear strip and lifting the lid up. Subsequently, the carton is reclosed by pushing the lid back down to its original position.

Conventional recloseable cartons of the above-identified type suffer from disadvantages which severely restrict their use in certain consumer packaging applications, particularly where the packaged product constitutes granular or powdered material such as concentrated laundry detergent powder or the like. The present inventor has discovered that a major drawback in this regard is the general absence of a positive locking arrangement in combination with a carton design which is conducive to repeated open and reclose operations. More specifically, the previously discussed exemplary design has been found to be undesirable in certain applications because of the likelihood of the lid opening and



leading to spillage of the contents thereof when such a closed carton is tipped over or otherwise disposed at an acute angle.

The present inventor has also discovered that such recloseable cartons can be improved by providing some form of positive indication, either tactile or audible, of the fact that an opened carton has been reclosed adequately in order to realize an effective locking position It has been determined in this regard that the presence of such tactile or audible feedback indicative of effective locking is desirable because the presence thereof provides consumers with a high "comfort" factor with respect to reclosure. Particularly in applications where the recloseable cartons are used to house granulated material having a restricted storage life once the storage container has been torn open, such positive feedback has bee determined to provide an apparent sense of reassurance to consumers as to retention of "freshness", "safety", or scent of the contained product.

Accordingly, there exists a distinct need for a recloseable, flip-top carton design which overcomes disadvantages of the above type associated with conventional recloseable paperboard cartons. The present invention effectively and conveniently realizes such a recloseable carton design.

## SUMMARY OF THE INVENTION

In accordance with the foregoing, the present invention provides a paperboard carton of the flip-top type which is repeatedly recloseable by means of a positive locking arrangement adapted to provide positive tactile and/or audible feedback indicative of effective closure.

The present invention provides a recloseable paperboard carton adapted to be initially filled with a product through a top or bottom of the carton prior to sealing the carton. The carton is useful for containing granular or powdered material in the form of an enclosure which is easily assembled and conveniently opened and reclosed for effective dispensing of material contained therein. The recloseable carton is realized using an efficient and cost-effective manufacturing process.

According to a specific embodiment, the present invention provides a recloseable carton having a positive locking arrangement providing positive feedback indicative of effective reclosure, as will be described in detail below in conjunction with the accompanying drawings. The recloseable carton is in the form of a six-sided parallelopiped enclosure having opposing top and bottom walls, front and back walls, and side walls formed from corresponding panels and flaps defined on a unitary, continuous paperboard blank. The outer layers of the side walls and the front wall are provided with horizontal tear-strip sections which form an integral and continuous tear strip that functions as convenient means for opening the carton from its sealed form.

According to another embodiment of the present invention, repeated closing and positive locking of the carton is realized by using a cut-out portion on an inner layer of the front wall. The cut-out portion includes a proximal flap and an island portion dispersed in forcibly displaceable mutual engagement. Once the engaging flap and island portion are disengaged forcibly by opening the carton lid, reclosing thereof leads to snap re-engagement of the flap and island portion elements accompanied by positive tactile and audible feedback indicative of effective carton closure.

## BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

FIG. 1 is a perspective view of a recloseable paperboard carton in accordance with a preferred embodiment of the present invention, the carton being in its closed form with the tear strip partially pulled open;

FIG. 2 is a top plan view of the paperboard blank used to form the recloseable carton shown at FIG. 1, according to an illustrative embodiment of this invention;

FIG. 3 is a perspective view of the paperboard blank of FIG. 2 in a partially-folded condition;

FIG. 4 is a perspective view of the recloseable carton of FIG. 1, as shown in its open condition with the lid raised upwardly to open the carton;

FIG. 5 is a segmented cross-sectional view taken along line 5—5 in FIG. 1 and illustrating the positive locking arrangement of the recloseable carton of the present invention; and

FIG. 6 is a similar segmented cross-sectional view of the positive locking arrangement showing the carton in a partially open condition.

While the invention is susceptible to various modifications and alternative forms, a specific embodiment thereof has been shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings and in particular to FIG. 1, there is shown a perspective view of an exemplary flip-top, recloseable paperboard carton having a positive locking arrangement in accordance with an illustrative embodiment of the present invention. In particular, FIG. 1 shows a recloseable carton which is a six-sided parallelopiped enclosure formed of three pairs of opposing, generally rectangular walls or panels. More specifically, the carton 10 includes opposing top and bottom walls 12 and 14, opposing front and back walls 16 and 18, and opposing side walls 20 and 22.

The relative upper portions of the outer layers of the side walls 20, 22 and the front wall 16 are provided with horizontal tear strip sections which effectively form an integral and continuous tear strip 24. The tear strip 24 is fairly conventional and located about the top three panels of the blank used to form the recloseable carton 10, as will be described in detail below with reference to FIG. 3.

The tear strip 24 effectively permits a user to conveniently open the carton 10 one it has been filled with the requisite contents and sealed. Tearing or pulling away of the tear strip 24, as indicated in FIG. 1, effectively releases the sealed edges of the side walls 20, 22 and the front wall 16 in order to delineate the carton 10 into a bottom base portion generally indicated as 26 and a upper lid or top portion generally indicated as 28. The arrangement is such that once the tear strip 24 has been completely pulled away, the carton lid 28 can be swung or raised upwardly away from the carton base 26 by virtue of a hinged attachment 29 of the horizontal edge of the top wall 12 to the corresponding horizontal edge of the back wall 18 of the carton 10.

FIG. 2 illustrates a top plan view of a paperboard blank used for forming a recloseable flip-top carton of the type described above in connection with FIG. 1. As shown in FIG. 2, the blank 30 is in the form of a single, planar, unitary section of paperboard which includes seven vertically aligned, substantially rectangular panels 32, 34, 36, 38, 40, 42 and 44. The seven panels are linked to each other by horizontal score lines 46 which facilitate folding of the carton panels relative to each other. With respect to the manner in which these panels interact to define the closed carton shown in FIG. 1, the panel 32 corresponds to an outer layer of the side wall 22, the panel 34 corresponds to an outer layer of the front wall 16, the panel 36 corresponds to an outer layer of the side wall 20, the panel 38 corresponds to the back wall 18, the panel 40 corresponds to an inner layer of the side wall 22, the panel 42 corresponds to an inner layer of the front wall 16, and the panel 44 corresponds to an inner layer of the side wall 20.

Each of the upper four panels 32, 34, 36 and 38 of the blank 30 is provided with a pair of flaps connected along respective transverse edges (vertical in FIG. 2) by corresponding score lines 48. More specifically, the side wall outer panel 32 includes a left end flap 32A and a right end flap 32B. Similarly, left end and right end flaps 34A, 34B are respectively associated with the front wall outer panel 34; left and right end flaps 36A, 36B are respectively associated with the side wall outer panel 36; and left and right end flaps 38A, 38B are associated with the back wall panel 38.

The flaps associated with the upper four panels 32, 34, 36 and 38 interact in a conventional manner to form the top and bottom walls of a carton. With respect to the manner in which these flaps interact to form the closed carton 10 shown in FIG. 1, the left end flaps 32A, 34A, 36A and 38A correspond to the top wall 12, and the right end flaps 32B, 34B, 36B and 38B correspond to the bottom wall 14. In the illustrative embodiment of FIG. 2, the end flaps 32A-B have substantially the same transverse (vertical) and longitudinal (horizontal) dimensions, respectively, as the end flaps 36A-B; and the end flaps 34A-B have substantially the same transverse and longitudinal dimensions, respectively, as the end flaps 38A-B. However, the end flaps 32A-B and 36A-B associated with the side wall outer panels 32 and 36 have transverse dimensions which are substantially smaller than the transverse dimensions of the end flaps 34A-B and 38A-B.

In the embodiment of FIG. 2, the side wall outer panels 32 and 36 and front wall outer panel 34 have the transverse tear strip 24 extending integrally across the panels. The design and structure of the tear strip 24 and its operation in effective sealing and convenient tearing-open of a carton of the type disclosed herein is fairly conventional and, accordingly, not described in detail herein. It suffices to state that the tear strip 24 is substantially in the form of a pair of transverse parallel lines having a predefined depth of cut (at least about 30 percent) into the outer sides of the side wall outer panels 32, 36 and the front wall outer panel 34. The tear strip 24 includes a reinforcing tape (not shown) attached to the inner side of the tear strip 24 to prevent the strip from breaking apart as a result of the strip being re-

moved from the carton 10 during the unsealing operation.

In the preferred embodiment, the side wall inner panels 40 and 44 and the front wall inner panel 42 function as a liner for the recloseable carton. The side wall inner panels 40 and 44 line the side wall outer panels 32 and 36, respectively, while the front wall inner panel 42 lines the front wall outer panel 34. To function most effectively as a liner, the transverse and longitudinal dimensions of the side wall inner panels 40 and 44 and the front wall inner panel 42 are slightly smaller than the corresponding dimensions of the side wall outer panels 32 and 36 and the front wall outer panel 34. Consequently, the liner panels 40, 42 and 44 fit snugly within the carton formed from the blank 30. Acting as a liner, the panels 40, 42 and 44 impart vertically-oriented structural support to the recloseable carton formed from the blank 30. This support permits several recloseable cartons to be safely stacked during storage and transit without the carton being damaged or destroyed due to stacking compression. For additional information concerning carton liners and their advantages, reference may be made to co-pending patent application Ser. No. 07/958,013 entitled *Paperboard Container Liner* and co-pending patent application Ser. No. 07/957,681 entitled *Improved Carton and Liner Tear-Tape Assembly*, both filed on Oct. 7, 1992, and incorporated herein by reference.

Using the construction of the blank 30, a carton formed from the blank 30 includes a liner without having to provide an additional paperboard blank to form the liner. The use of a single paperboard blank to produce a lined carton is relatively easy to manufacture and cost-effective. In addition, lined cartons formed from single blanks may be produced relatively fast because their production rate is only limited by the time it takes to produce one blank.

In accordance with the recloseable carton of the present invention, the front wall inner panel 42 is provided with an overhanging flap 50 which is connected to the left transverse edge of the panel 42 by a line of weakness 49 which is akin to the earlier-described lines of weakness used for linking the seven main panels together. The line of weakness 49 linking the overhanging flap 50 to the front wall inner panel 42 is creased sufficiently deep so as to permit bending or hingedly rotating the flap 50 downwardly and inwardly in order to be adhered, by an appropriate glue or like adhering means, to the inside surface of the panel 42, i.e., the surface of the panel 42 which is hidden from view in FIG. 2. The position of the flap 50 after it has been attached to the inside surface of the panel 42 is denoted by the reference numeral 50'.

Also, in accordance with the present invention, the front wall inner panel 42 has a die-cut portion 52 thereupon which includes a proximal flap 54 about the left transverse edge of the panel 42 by the same line of weakness 49 which links the overhanging flap 50 to the front wall inner panel 42. In addition, the die-cut portion 52 includes a flap-receiving or distal island portion 56 which is linked to the leading transverse edge of the proximal flap 54 and the surrounding sections of the panel 42 by means of weakening "nicks." The weakening nicks allow the distal island portion section 56 to be easily separated from both the surrounding portion of the front wall inner panel 42 and the proximal flap 54.

In particular, the die-cut portion 52, including the proximal flap 54 and the distal island portion 56, is designed to be such that the island portion 56 ma be adhered in a fixed manner to the inside surface of the front wall outer panel 34 above the tear-strip 24 generally in the position indicated in dashed lines by the numeral 56'. The arrangement is such that when the recloseable carton of FIG. 1 is formed using the carton blank shown in FIG. 2 and the carton 10 is initially opened by tearing away the tear-strip 24 and upwardly raising the lid 28 thereof, the island portion 56 on the cut-out portion 52 breaks free of its restricting nicks and remains attached to the lid 28 about the inside surface of the front wall outer panel 34 at position 56'.

A key advantage with respect to the above-described flap arrangement using the die-cut portion 52 is that when the carton formed from the blank 30 is opened by raising the lid 28, the proximal flap 54 is also rotated outwardly and upwardly. Subsequently, when the carton is closed by replacing the lid 28 to its initial closed position, the island portion 56 depresses the proximal flap 54 in a downward direction. More importantly, when the lid is closed down to such an extent that the island portion 56 moves down beyond the extension of the proximal flap 54, the island portion 56 snaps into a locked position and is restrained from upward movement by the confining action of the proximal flap 54 exerted upon the opposing transverse edge of the island portion 56.

As a result, the reclosed lid can only be opened by the exertion of a direct force sufficient to snap the island portion 56 back out of engagement with the proximal flap 54 by virtue of the upward and outward rotation thereof due to the opening of the lid. The above-described "snap" action undergone by the island portion 56 relative to the proximal flap 54 as the lid 28 of the carton 10 is reclosed provides positive tactile as well as audible feedback indicative of effective reclosing and, more importantly, locking of the lid 28 relative to the base section 26 of the carton 10.

The manner in which the carton 10 shown in FIG. 1 is assembled from the paperboard blank 30 is fairly conventional except for the above-described manner according to which the overhanging flap 50 and the die-cut portion 52 (including the proximal flap 54 and the island portion 56) is folded and fixedly adhered to the corresponding portions of the blank panels. The overall operations involved in assembling the blank 30 into the carton 10 are well-known to those skilled in the art of paperboard packaging containers and is, accordingly, not described in detail herein.

Referring to FIG. 3, it is sufficient to state herein that the blank 30 is initially folded and glued to form an open-sided generally rectangular, four-sided container by appropriately folding the seven main panels 32, 34, 36, 38, 40, 42 and 44 about the corresponding score lines or lines of weakness 46. The recloseable carton 10 of FIG. 1 is basically defined as an enclosure formed by the various panels and end flaps which define the carton blank 30. In particular, the overhanging flap 50 is first folded to the extent of 180° about the line of weakness 49 and glued or otherwise adhered so that it lies permanently against the inner side of the front wall inner panel 42.

Subsequently, the carton blank 30 is formed into a generally rectangular, four-sided tubular body by successively folding each of the seven main panels about the transverse lines of weakness 46 which link adjoining panels by the extent of 90° so that the front wall outer panel 34 is effectively positioned with its inner surface

positioned against the outer surface of the front wall inner panel **42**. At this point, the external surface of the island portion **56** which contacts the inner surface of the front wall outer panel **34** is glued or otherwise fixedly adhered thereto. The proximal flap **54** is not affixed to the corresponding inner surface of the front wall outer panel **34** but, instead, remains in contact therewith by virtue of being linked to the island portion **56** through the connection using the weak nicks described above.

To securely hold the blank **30** in the form of a four-sided tubular body, the outer surface of the side wall inner panel **44** is fixedly adhered by adhesive, such as glue, to the inner surface of the side wall outer panel **36**. Similarly, the outer surface of the side wall inner panel **40** is fixedly adhered to the inner surface of the side wall outer panel **32**.

The open-ended tubular body formed as described above is then completed into the form of the carton **10** by appropriately folding inward the outwardly extending end flaps and gluing together correspondingly opposed sections thereof. This assembly is preferably performed in two stages: first, closing and sealing one end (top or bottom) of the carton, and next filling the box with the requisite contents prior to closing the remaining end of the carton to yield a closed and entirely sealed carton as disclosed in FIG. 1. In powdered detergent applications and the like, the "top/bottom-fill" design of the carton **10** formed from the carton blank **30** is advantageous because most detergent companies use equipment adapted for filling detergent through the top or bottom of cartons.

In its closed form, the carton **10** is a substantially parallelopiped enclosure formed by opposing top and bottom walls **12, 14** which are respectively formed from (i) the combination of folded and glued flaps **32A, 34A, 36A** and **38A**, and (ii) the combination of folded and glued flaps **32B, 34B, 36B** and **38B**; opposing front and back walls **16** and **18** respectively formed from (i) the front wall outer panel **34** in conjunction with the front wall inner panel **42**, and (ii) the back wall panel **38**; and opposing side walls **20, 22** respectively formed from (i) the side wall outer panel **36** in conjunction with the side wall inner panel **44**, and (ii) the side wall outer panel **32** in conjunction with the side wall inner panel **40**.

Referring now in particular to FIGS. **4, 5** and **6**, there are shown illustrations which facilitate an understanding of the manner in which the positive recloseable locking arrangement functions in accordance with the recloseable carton of the present invention. As particularly shown in the segmented cross-sectional view of FIG. **5**, when the carton is in its sealed condition, the island portion **56** remains attached to the proximal flap **54** by virtue of the weak nicks through which the two elements are linked. In addition, the island portion **56** is permanently adhered to the corresponding inner surface of the lid **28**. At the same time, both the island portion **56** and the proximal flap **54** also remain in contact with the folded over overhanging flap **50** of the front wall inner panel **42**.

When the tear strip **24** has been torn away and the box is opened by pushing the lid **28** in an upwardly direction (as indicated by the large arrow in the segmented cross-sectional of FIG. **6**), the upper transverse edge of the island portion **56** pushes against the corresponding opposing transverse edge of the proximal flap **54**. When the upward force exerted upon the lid **28** sufficiently forces the proximal flap **54** as well as a portion of the overhanging flap **50** to "give" in the general direction of the small arrow (see FIG. **6**), the island portion **56** clears the restriction presented thereto by the proximal flap **54** and the lid **28** becomes free to be opened. It should be noted that the upward movement of the lid **28** and island portion **56** initially causes the proximal flap **54** to be hingedly rotated in an upward direction until the upward movement, in combination with the "give" of the proximal flap **54** and the overhanging flap **50**, allows the island portion **56** to clear the proximal flap **54**. As shown in FIG. **4**, the island portion **56** includes a tab **57** which can be grasped by a user for assistance in opening the lid **28**.

When the recloseable carton **10** is reclosed by closing the lid **28** back to its original position, a similar interaction between the proximal flap **54** and the island portion **56** takes place. More specifically, downward movement of the lid **28** causes the island portion **56** attached thereto to move against proximal flap **54**. As the downward force is continued to be exerted, the island portion **56** causes the flap **54** to be hingedly rotated in a downward direction while, at the same time, causing the proximal flap **54** and the overhanging flap **50** to again "give" until the island portion **56** completely bypasses the flap **54** and snaps into a locked position with contact between opposing transverse edges of the island portion **56** and the proximal flap **54**. This snap/locking action produces the above-described positive tactile and audible feedback when the lid **28** has been effectively locked.

A significant advantage with the above-described structural design for the positive closure arrangement is that the interlocking elements, i.e., the proximal flap **54** and the distal island portion **56**, are both originally formed on the front wall inner panel of the blank. In particular, this design prevents any possibility of the elements being separated from each other or, more importantly, from the carton blank, as a result of any step involved in the assembly process.

The design is also advantageous in that it avoid unnecessary board build-up resulting from folding over of panel sections in order to define the interlocking elements. More specifically, the interlocking action of these elements, as described above with respect to FIGS. **4–6**, is realized with minimal board build-up particularly in the "sandwiched" layer portions (see, for instance, FIGS. **5** and **6**) where the overlapping panel sections are adjacently positioned to define the container walls. As a result, the carton panel cuts necessary for proper assembly can be made relatively straight (as opposed to being tapered) so that the resulting assembled carton has a substantially "square" configuration. This eliminates the need for more exotic mechanical packaging equipment used in filling and sealing.

While the present invention has been described with reference to one or more particular embodiment, those skilled in the art will recognize that many changes may be made thereto without departing from the spirit and scope of the present invention. For example, in one embodiment the design of the panels **40, 42** and **44** of the blank **30** in FIG. **3** is modified so that the panels have a shorter longitudinal (vertical in FIG. **3**) dimension so that the panels line only an upper one-third to one-half of the side wall outer panels **32** and **36** and the front wall outer panel **34**. In another embodiment, an additional panel is hingedly connected to the side wall inner panel **44** of FIG. **2** so as to function as a back wall inner panel. The additional panel lines the back wall panel **38** and has transverse and horizontal dimensions slightly

smaller than the corresponding dimensions of the back wall panel 38. Each of these embodiments and obvious variations thereof is contemplated as falling within the spirit and scope of the claimed invention, which is set forth in the following claims.

What is claimed is:

1. A recloseable paperboard carton, comprising:

opposing top and bottom walls, opposing front and back walls, and opposing side walls;

wherein the side walls and front wall include inner and outer layers, an upper portion of the outer layers including an integral and continuous horizontal tea strip for opening up the carton from a sealed form to form a lid hingedly attached to a base section, and the inner layers being disposed adjacent to the upper portion of the outer layers; and

wherein the inner layer of the front wall includes a flap and a flap-receiving portion disposed in forcibly displaceable mutual engagement such that opening the carton lid exerts a force which disengages the mutual engagement between the flap and the flap-receiving portion, and reclosing the lid leads to snap re-engagement of the flap and the flap-receiving portion.

2. The recloseable paperboard carton as recited in claim 1, wherein the snap re-engagement of the flap and the flap-receiving portion is accompanied by positive tactile and audible feedback.

3. The recloseable paperboard carton as recited in claim 2, wherein the carton is assembled such that the flap-receiving portion is fixedly attached to an inner surface of the carton lid and at the same time separatably attached to the flap, and wherein opening of the lid separates the flap-receiving portion from the flap while retaining the flap on the inner layer of the front wall.

4. The recloseable paperboard carton as recited in claim 3 wherein the flap-receiving portion includes an island portion.

5. The recloseable paperboard carton as recited in claim 3 wherein the flap and the flap-receiving portion are separatably linked to each other about opposing transverse edges thereof, a distal transverse edge of the flap-receiving portion being separatably attached to an inner surface of the front wall outer layer, wherein opening of the carton lid causes the flap-receiving portion to be separated from the flap and the front wall inner layer and be retained on the inner surface of the carton lid.

6. The recloseable paperboard carton as recited in claim 5 wherein opening of the carton lid causes the opposing transverse edge of the flap-receiving portion to push against the opposing transverse edge of the flap until the engagement therebetween is released by relative inward movement of the flap and the front wall inner layer to which it is attached.

7. The recloseable paperboard carton as recited in claim 6 wherein the flap-receiving portion includes a tab adapted to be grasped by a user in opening the carton lid.

8. The recloseable paperboard carton as recited in claim 5 wherein reclosing of the carton lid causes re-engagement between the opposed transverse edges of the flap-receiving portion and the flap by interaction between the flap and the flap-receiving portion wherein the flap and the front wall inner layer to which it is attached undergo relative inward movement until the flap-receiving portion realizes snap engagement between the opposed transverse edges accompanied by the positive tactile and audible feedback.

9. The recloseable paperboard carton as recited in claim 3, wherein the inner layer of the front wall further includes an overhanging section connected to an inner surface of the front wall inner layer, the overhanging section being adjacent to the flap and the flap-receiving portion.

10. A recloseable paperboard carton, comprising:

opposing top and bottom walls, opposing front and back walls, and opposing side walls;

wherein the side walls and front wall include inner and outer layers, an upper portion of the outer layers including an integral and continuous horizontal tear strip for opening up the carton from a sealed form to form a lid hingedly attached to a base section, and the inner layers being disposed adjacent to the upper portion of the outer layers;

wherein the inner layer of the front wall includes a die-cut portion, disposed in proximity to the tear strip, having (i) a flap arranged substantially parallel to the tear strip, the flap having a first transverse edge hingedly connected to the front wall inner layer and (ii) an island portion separatably linked to a second transverse edge of the flap and surrounding sections of the front wall inner layer by means of weakening nicks, an outer surface of the island portion being fixedly attached to an inner surface of the front wall outer layer; and

wherein the flap and the island portion are disposed in forcibly displaceable mutual engagement such that removing the tear strip and opening the carton lid causes the island portion to break free of the weakening nicks and to disengage the mutual engagement, and reclosing the lid leads to snap re-engagement of the flap and the island portion.

11. A method of producing a recloseable paperboard carton, comprising the steps of:

providing a paperboard blank including seven substantially rectangular panels hingedly connected to each other by horizontal score lines, the seven panels including a plurality of outer panels corresponding to outer layers of the carton and a plurality of inner panels corresponding to inner layers of the carton, each of the outer panels having a pair of end flaps hingedly connected to opposing transverse edges of each of the outer panels, selected ones of the outer panels having a transverse tear strip extending integrally across the selected ones of the outer panels, and one of the inner panels including a flap and a flap-receiving portion disposed in forcibly displaceable mutual engagement;

forming the blank into a generally rectangular, four-sided tubular body by successively folding each of the outer and inner panels about the horizontal score lines to the extent of 90° so that the inner panels are positioned within the outer panels;

adhering the flap-receiving portion to an inner surface of an adjacent one of the outer panels; and

folding the pair of end flaps of each of the outer panels to form top and bottom walls of the carton.

12. The method as recited in claim 11, further comprising the step of adhering an outer surface of one of the inner panels to an inner surface of an adjacent one of the outer panels.

13. The method as recited in claim 11, further including the step of removing the tear strip to form a carton having a lid and a base section.

14. The method as recited in claim 13, further including the step of opening the lid by exerting a force which disengages the mutual engagement between the flap and the flap-receiving portion.

15. The method as recited in claim 14, further including the step of reclosing the lid by snap re-engagement of the flap and the flap-receiving portion.

* * * * *

# United States Patent [19]

**Schillinger**

[11] **Patent Number: 4,513,863**

[45] **Date of Patent: Apr. 30, 1985**


[54] **FLIP TOP DISPENSER CARTON**


[75] Inventor: **Joseph F. Schillinger**, Fulton, Ill.

[73] Assignee: **Champion International Corporation**, Stamford, Conn.



[21] Appl. No.: **552,926**

[22] Filed: **Nov. 18, 1983**

[51] **Int. Cl.**³ ..... **B65D 85/10**; B65D 85/12

[52] **U.S. Cl.** ..... **206/264**; 206/268; 206/273; 229/44 CB

[58] **Field of Search** ..... 206/273, 268, 264; 229/44 R, 44 CB, 17 R



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*Primary Examiner*—Joseph Man-Fu Moy

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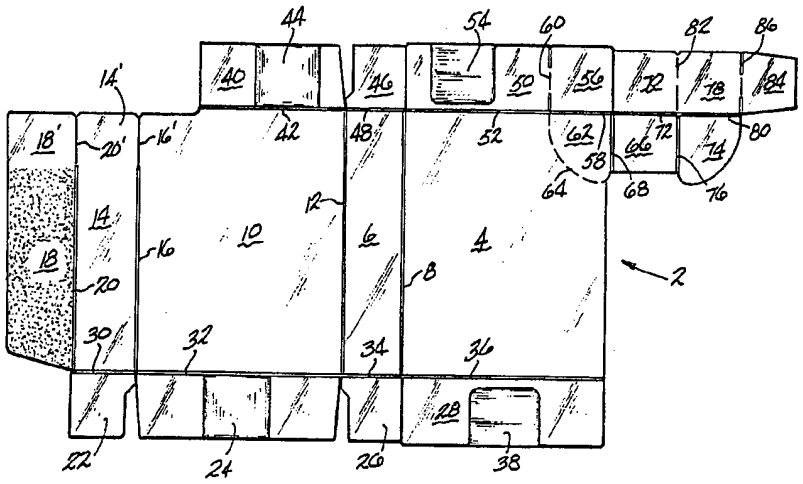
[57] **ABSTRACT**

The subject carton is adapted for dispensing of its contents through an opening in the top of the carton. The opening is opened and closed by a pivotable flip top closure which is hinged to the top of the carton so as to allow product to be poured out of the carton through the opening. The opening is located at a top side portion of the carton.


**6 Claims, 6 Drawing Figures**



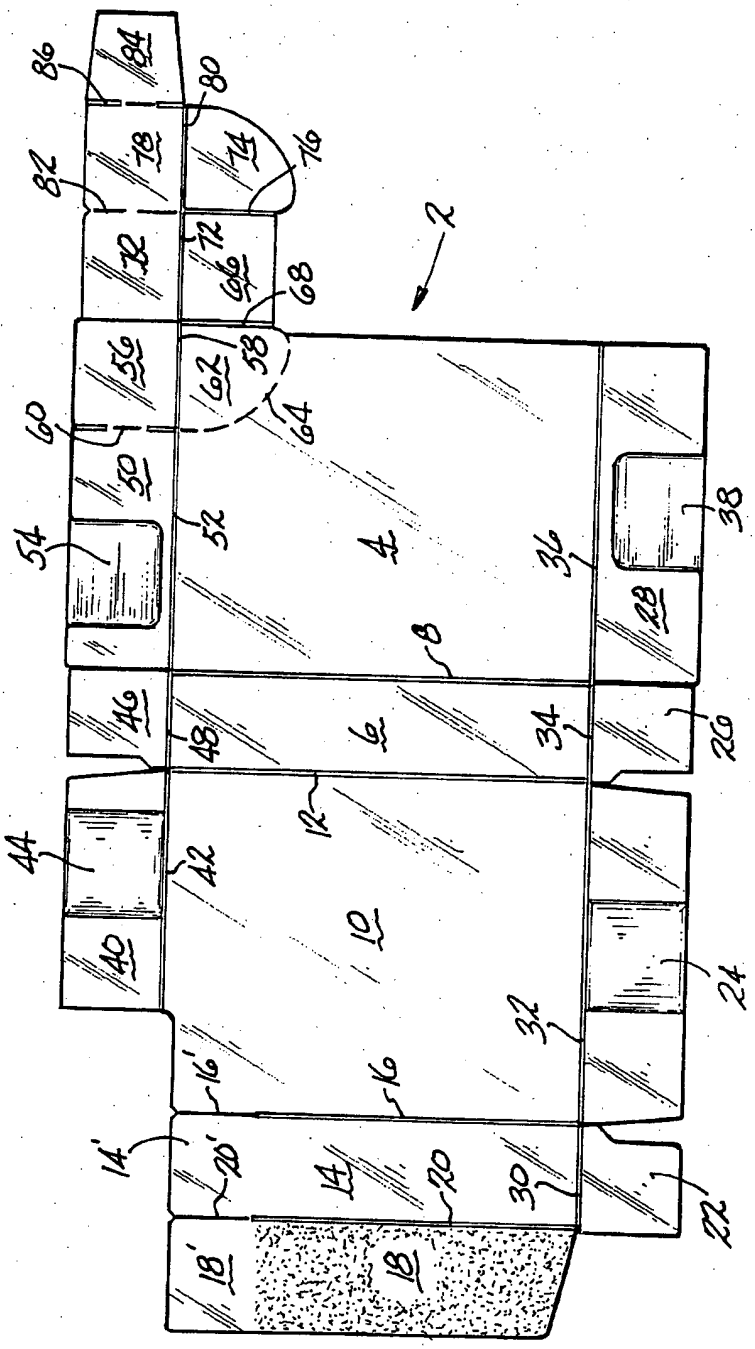

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FIG-1

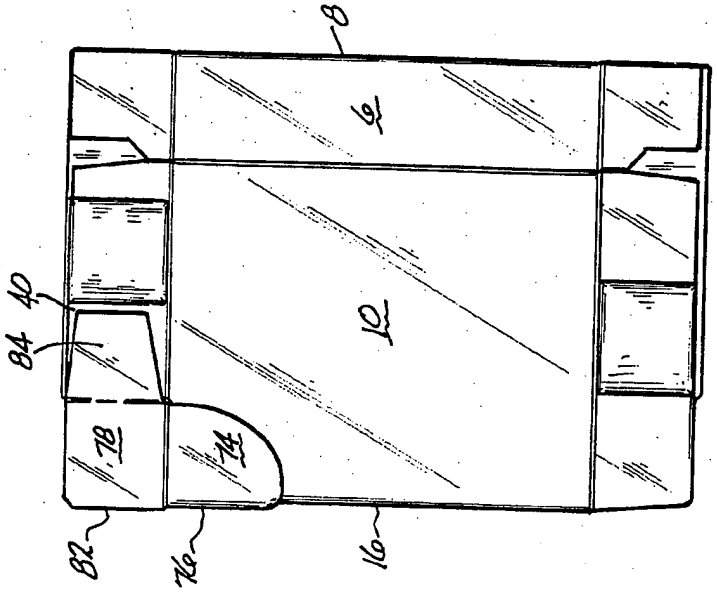



FIG-3

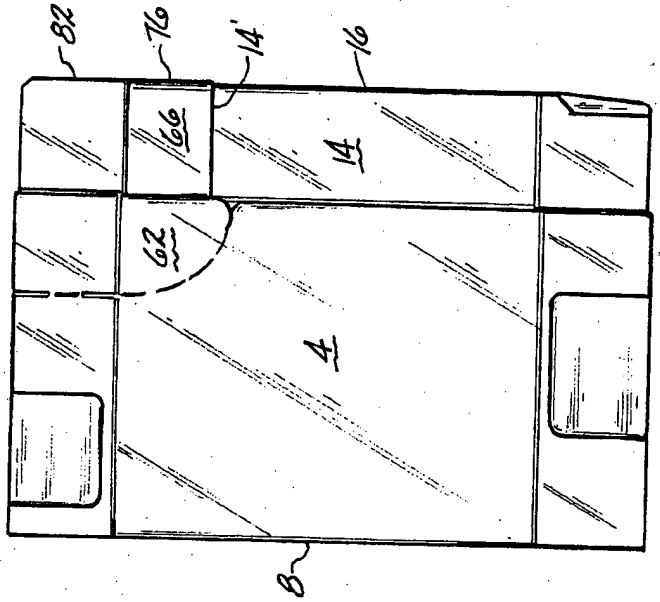



FIG-2

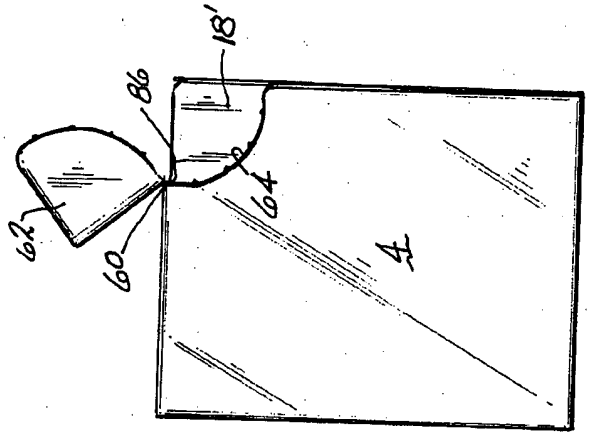



FIG-5

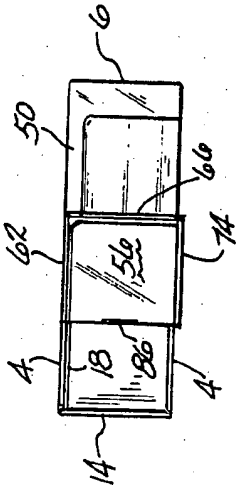



FIG-6

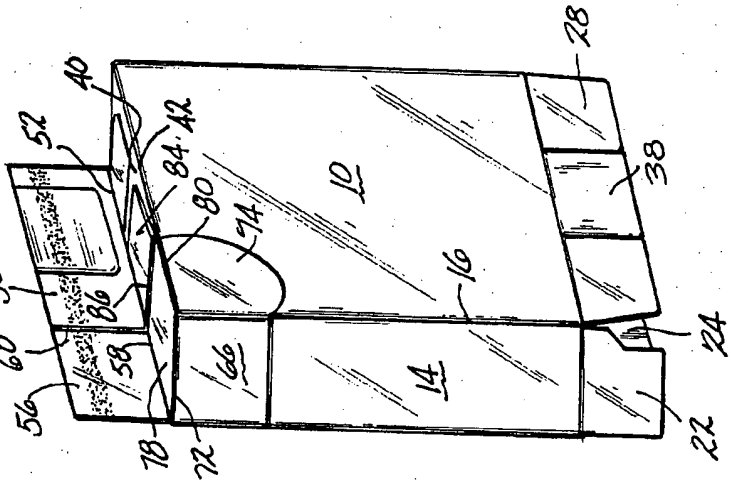



FIG-4

# FLIP TOP DISPENSER CARTON

This invention relates to a carton for dispensing product through an opening formed in the top of the carton. The opening is opened and closed by means of a flip top pivoting closure hingedly connected to the top wall of the carton.

Paperboard cartons adapted for dispensing of product via an opening in the top of the carton which is covered and uncovered by a pivotable flip top are generally old in the art. Some typical constructions for such cartons are shown in U.S. Pat. Nos. 2,348,377 Goodyear; 2,351,812 Guyer; 2,355,665 Mabee; 2,361,597 Buttery; 3,033,435 Forrer; 3,335,924 Miller; 3,338,502 Sabin; and 3,765,593 D'Alessio.

The carton of this invention has a pivotable flip top closure which is hingedly connected to the top wall assembly of the carton. The top closure has side wing panels, one of which is integral with the front wall of the carton and the other of which overlaps the back wall of the carton. The wing panels are foldably interconnected by an outer panel which overlies a side wall of the carton. The top wall of the flip top closure is formed by overlapping closure flaps foldably connected respectively to the front wall, the back wall, and the outer panel, which overlapping closure flaps are adhesively secured together. The front wing panel is connected to the front panel by a rupturable interrupted cut score line which serves to hold the flip top closure in its closed position prior to initially opening the carton. To open the carton, the outer panel is moved upwardly causing the cut score line to rupture whereby the closure is free to pivot to a carton-opening position. The closure can then be pivoted back down to re-close the carton.

It is, therefore, an object of this invention to provide a paperboard carton formed from a one-piece blank, which carton has a pivoting flip top closure.

It is a further object of this invention to provide a carton of the character described wherein the closure is initially secured to a wall of the carton by a rupturable interrupted cut score line.

It is an additional object of this invention to provide a carton of the character described wherein the closure includes panels thereof which overlie respective walls of the carton.

These and other objects and advantages of the carton of this invention will become more readily apparent from the following detailed description of a preferred embodiment thereof taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a plan view of a preferred embodiment of a cut scored paperboard blank from which the carton of this invention is formed, the outside surface of the blank facing the viewer;

FIG. 2 is a plan view of the flattened bulk shipping form of the carton showing the front wall of the carton;

FIG. 3 is a plan view similar to FIG. 2 but showing the back wall of the carton;

FIG. 4 is a perspective view of the partially erected carton showing the manner in which the flip top closure is formed prior to folding the outermost top closure flap into place;

FIG. 5 is a front side elevational view of the erected carton showing the top closure pivoted to its open position; and



FIG. 6 is a top plan view of the erected carton showing the top closure pivoted to its open position.

Referring now to the drawings, there is shown in FIG. 1 a preferred embodiment of a one-piece cut scored paperboard blank, denoted generally by the numeral 2, which is adapted to form the carton of this invention. The blank 2 includes a front wall panel 4, a first side wall panel 6 connected to the front wall panel 4 along a fold line 8, and a back wall panel 10 connected to the side wall panel 6 along a fold line 12. A second side wall panel 14 is connected to the back wall panel 10 along a fold line 16, and a glue flap 18 is connected to the second side wall panel 14 along a fold line 20. The stippling on the glue flap 18 indicates generally the placement of adhesive on the glue flap 18. It is noted that the upper portion 18' of the glue flap 18 is devoid of adhesive. It is also noted that the upper portions adjacent to the fold lines 16 and 20 are cut at 16' and 20' to give flexibility to the upper portion 14' of the side wall panel 14.

Bottom closure flaps 22, 24, 26 and 28 are foldably connected to the panels 14, 10, 6 and 4 along fold lines 30, 32, 34 and 36 respectively. The flap 28 has an embossed area 38 thereon which is raised toward the viewer, as shown in FIG. 1. This allows for closer contact between the flaps when the bottom is formed on the carton.

The top closure of the carton is formed by a plurality of closure flaps which are folded into overlapping relationship. The top closure flaps include a flap 40 foldably connected to the top of the back wall panel 10 along a fold line 42. The flap 40 is embossed at 44 so as to be raised toward the viewer as seen in FIG. 1. A top closure flap 46 is connected to the top of the side wall panel 6, along a fold line 48. A third top closure flap 50 is connected to the top of the front wall panel 4 along a fold line 52. The closure flap 50 is embossed at 54 so as to be recessed away from the viewer as seen in FIG. 1. A pivoting closure panel 56 is foldably connected to the top edge of the front wall panel 4 along a fold line 58 and is also pivotably connected to the closure flap 50 along a fold line 60. It will be noted that the closure panel 56 is connected by the fold line 58 to a portion 62 of the front wall panel 4 which is bounded by a rupturable interrupted cut score line 64, which portion 62 forms a wing panel for the closure assembly of the carton. The wing panel 62 is foldably connected to an outer end closure panel 66 by a fold line 68. The closure panel 66, in turn, is foldably connected to an inner top closure flap 70 by a fold line 72, and to a second wing panel 74 by a fold line 76. The second wing panel 74 is foldably connected to a medial top closure flap 78 along a fold line 80. The medial top closure flap 78 is foldably connected to the inner top closure flap 70 along a rupturable cut score line 82, and to a second medial top closure flap 84 along a fold line 86. The reverse surface of the closure flap 84 is coated with an adhesive layer.

In order to form the flattened bulk shipping form of the carton shown in FIGS. 2 and 3, the blank 2 is folded about the fold line 16 and the fold line 8 to bring the adhesive coated surface of the panel 18 into contact with the inner surface of the front wall panel 4. The wing panel 74 and medial top closure flap 78 are folded about the fold lines 76 and 82 to bring the adhesive coated surface of the flap 84 into contact with the top closure flap 40. The folding of the fold line 82 causes rupture of the latter whereby the flap 78 is then free of connection to the flap 70. As noted in FIGS. 2 and 3, the

outer side closure panel **66** overlies the upper portion **14'** of the side wall panel **14**, and the wing panel **74** overlies the back wall panel **10**.

The carton is further erected to the expanded form shown in FIG. **4** by applying compression to the fold lines **8** and **16** to cause the side panels **6** and **14** to orient perpendicular to the front and back panels **4** and **10**. This also orients the outer side closure panel **66** perpendicular to the wing panels **62** and **74**. The side inner top closure flaps **46** and **70** are then folded about the fold lines **48** and **72** respectively to lie perpendicular to the side wall panels **6** and **14** with the flap **70** also lying perpendicular to the outer side closure panel **66**. The coadhered panels **40, 78** and **84** are then folded inwardly about the fold lines **42** and **80** respectively into overlapping relationship with the flaps **46** and **70** and secured thereto. The outer top closure flaps **50** and **56** are then folded inwardly about the fold lines **52** and **58** respectively into overlapping relationship with the flaps **40, 84** and **78** and secured thereto. The latter folding operation brings the fold lines **60** and **86** into overlying registry. The top of the carton is thus closed whereupon the carton is then filled with product through the open bottom which is thereafter closed.

To open the filled carton, the outer top closure panel **66** is pulled upwardly from the underlying side wall panel **14** causing the rupturable interrupted cut score line **64** to break freeing the wing panel **62** from connection with the front wall panel **4**. The closure panels **56, 62, 66, 70, 74** and **78** then pivot about the superimposed fold lines **60** and **86** to the position shown in FIG. **5**. It will be noted that the absence of adhesive on the upper portion **18'** of the panel **18** allows the wing **62** to move upwardly away from the front wall panel **4**. Pivoted movement of the top closure may be continued until the panel **56** is brought against the panel **50**, as shown in FIG. **6**, whereupon the carton is opened so that its contents can be poured out through the exposed opening. The carton may be reclosed by pivoting the top closure structure about the fold lines **60** and **86** back to its initial position.

It will be readily appreciated that the carton of this invention provides a secure, yet easily openable flip top closure for dispensing of product. The carton can be readily erected from the blank to a flattened bulk shipping configuration, and further erected from the flattened configuration to an expanded form. The connection between one of the wing panels and its associated front wall panel permits ready observation of tampering of the closure assembly.

Since many changes and variations of the disclosed embodiment of the invention may be made without departing from the inventive concept, it is not intended to limit the invention otherwise than as required by the appended claims.

What is claimed is:

**1**. A carton formed from a one-piece paperboard blank, said carton comprising front and back walls interconnected by opposed side walls and said carton having a pivotable top closure comprising:

(a) a pair of wing panels, one of said wing panels being connected to one of said front and back walls by a rupturable interrupted cut score line, and the other of said wing panels overlying the other of said front and back walls;

(b) an outer closure panel foldably connected to each of said wing panels, said outer closure panel overlying one of said side walls;

(c) a plurality of top closure flaps foldably connected to said wing panels and said outer closure panel, said top closure flaps being overlapped and adhesively secured together; and

(d) at least one of said top closure flaps being foldably connected to a top cover flap which, in turn, is foldably connected to one of said front and back walls.

**2**. A carton formed from a one-piece paperboard blank, said carton having front, back and side walls foldably connected together, and said carton having a pivotable top closure comprising:

(a) a first top cover flap foldably conncted to one of said front and back walls;

(b) a first wing panel connected to one of said front and back walls along a rupturable interrupted cut score line;

(c) a second wing panel overlying the other of said front and back walls;

(d) an outer closure panel overlying one of said side walls and foldably connected to each of said wing panels;

(e) a first top closure flap foldably connected to said first wing panel;

(f) a second top closure flap foldably connected to said outer closure panel;

(g) a third top closure flap foldably connected to said second wing panel;

(h) said first, second and third top closure flaps being overlapping and adhesively secured together; and

(i) at least one of said top closure flaps being foldably connected to said first top cover flap.

**3**. The carton of claim **2**, further comprising a second top cover flap foldably connected to the other of said front and back walls with said first and second top cover flaps being overlapping and adhesively secured together.

**4**. The carton of claim **3**, further comprising a glue flap connected to said third closure flap along a first fold line said glue flap overlapping and being adhesively secured to one of said first and second top cover flaps.

**5**. The carton of claim **4**, wherein said first top closure flap is foldably connected to the other of said first and second top cover flaps along a second fold line and wherein said first and second fold lines are disposed in overlying registry.

**6**. The carton of claim **2**, further comprising a glue panel foldably connected to said one of said side walls and adhesively secured to an inside surface of said one of said front and back walls, said glue panel underlying said first wing panel and being free of adhesive on the portion thereof which underlies said first wing panel.

* * * * *

March 28, 1967 KATSUJI SHIMADA ETAL 3,311,283

CARTON HAVING AN AUTOMATICALLY OPENABLE COVER

Filed Nov. 30, 1964 2 Sheets-Sheet 2

FIG.4

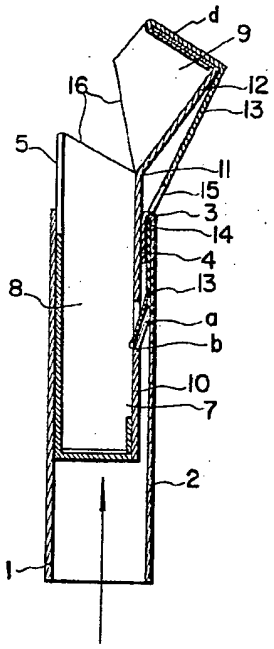



FIG.5a

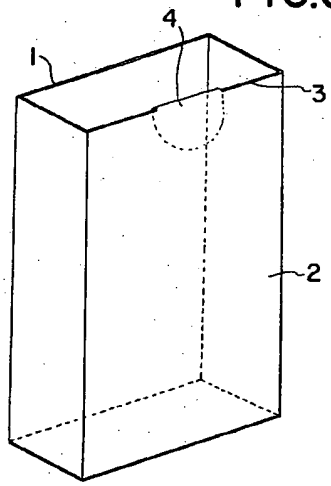
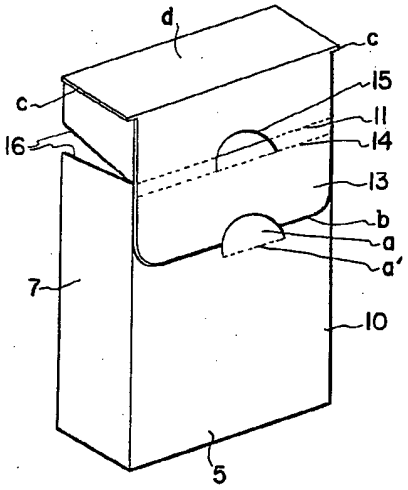



FIG.5b

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March 28, 1967 KATSUJI SHIMADA ETAL 3,311,283

CARTON HAVING AN AUTOMATICALLY OPENABLE COVER

Filed Nov. 30, 1964

2 Sheets-Sheet 1

FIG.1

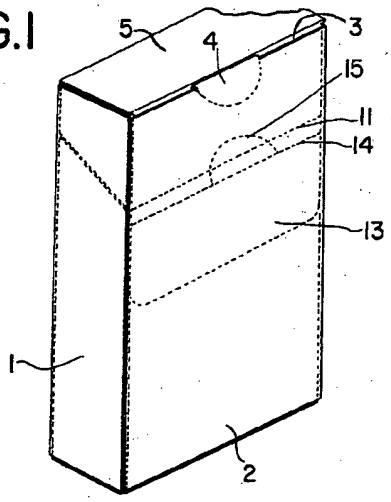



FIG.2

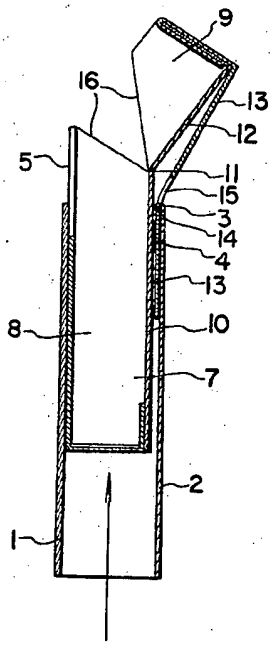
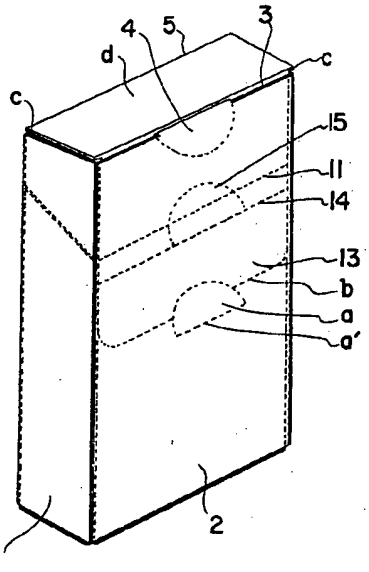



FIG.3

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United States Patent Office 3,311,283 Patented Mar. 28, 1967



# 3,311,283
# CARTON HAVING AN AUTOMATICALLY OPENABLE COVER

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Filed Nov. 30, 1964, Ser. No. 414,784
Claims priority, application Japan, June 19, 1964, 39/34,930
3 Claims. (Cl. 229—20)

This invention relates to a carton having an automatically openable cover and having such a construction that the upper part of an inner case can be bent so as to open by a connection between a tab on the inner face of an outer sleeve-like case and a slidable member lying against the inner case when the inner case is pushed up along the outer sleeve-like case.

It is an object of the present invention to provide a carton which can be opened automatically by only one motion with no need of any special handling for opening the cover.

Another object of this invention is to provide a device to limit the amount the cover can be opened for making sure that the cover will close after the inner case has been pushed too far through the outer case during opening of the carton.

A further object of this invention is the provision of a device to close the carton so that the inner case will not drop down out of the outer case during closing.

A preferred embodiment of the invention is shown in the accompanying drawing in which:

FIG. 1 is a perspective view from the rear side of one embodiment of the invention;

FIG. 2 is a side sectional view of the carton of FIG. 1 after it has been opened;

FIG. 3 is a perspective view of an embodiment of the carton wherein a safety device has been provided;

FIG. 4 is a sectional view of the case of FIGURE 3 after it has been opened; and

FIGS. 5A and 5B are perspective views of the outer and inner cases, respectively, of FIGS. 3 and 4.

Like reference numerals indicate corresponding parts in the several views of the drawing.

Paperboard cartons having an inner casing slidable in an outer sleeve-like casing have been used widely for cigarettes, candies and so on, but such a carton not only requires handling to push the inner casing out of the outer casing but also requires handling by the fingers to pull and open the cover to remove the contents. These handlings may be cumbersome for an adult in taking, for example, cigarettes out of the carton and for a younger child in taking candies out of the carton.

We have now devised a new carton which can be opened automatically by only one motion of pushing the inner casing without need of other handlings owing to the provision of a new and simple device.

A case with only a device to open its cover automatically has a defect that when it is handled wrong such as, for example, by pushing the inner case downward by mistake, its contents may drop out of the case owing to the inner case falling out of the outer case, and when the inner case is pushed too far upwardly, its contents may also drop out of the case owing to the inner case coming completely out of the outer case, and when the inner case is pushed still further upwardly, closing the cover may become difficult and the expected action of a tab 4 on the outer case does not occur because the inner case is moved upward so far that an aperture 15 in the flap on the inner case bends the tab 4 upwardly. As a solution for such difficulties, tight contact of the inner case to the outer case can be provided, but a carton of this type may be expensive to manufacture with sufficient precision and moreover may result in bad sliding action between the casings during opening and closing and result in a bad effect on the action of the flap when opened too much. The carton of the present invention has a safety device shown in FIGURES 3, 4 and 5 which can eliminate the difficulties and faults above described, and easy sliding action and prevention of the inner case from coming out of the outer case can be attained by limiting the movement of the inner case without restricting the action of a tab. Thus the carton of the present invention may be said to be a completely satisfactory embodiment of an automatically openable carton.



One embodiment of this invention, referring to the drawing in greater detail, is described in the following example:

## EXAMPLE 1

An outer sleeve-like casing 1 of rectangular cylindrical form is manufactured so that it has on the middle of the top edge 3 of its rear panel 2 a resilient tab 4 which is bent over against the inner face of the rear panel 2. An inner casing 5 is manufactured so that its rear panel 10 can be bent at a fold 11 by which the rear panel 10 is divided in two parts, i.e., a main part 8 and a cover 9. Other side panels of the inner casing 5 are separated completely along a line 16. A depending actuating member 13 is attached to the top edge of the rear cover panel 12 and extends down between the inside of the rear panel 2 of the outer casing and the rear panel 10 of the inner casing. At the position where the depending actuating member 13 is opposite the fold 11 in the rear panel 10 of the inner casing 5 when the carton is closed, is a fold 14 capable of being bent. In addition, at the position where the depending member 13 is opposite the tab 4 on the outer case 1 when the carton is opened is an aperture 15 having a similar shape but in the reverse position of the tab 4.

To open this carton, only one motion is required. It is only necessary to push the button of the inner casing in the direction as shown in FIGURE 2 with the tip of a finger. The tab 4 on the outer casing engages in the aperture 15 in the depending member 13 as the inner casing is pushed upward, and the depending member 13 itself cannot rise any further because of the engagement by the tab 4, the top of which extends between the rear panel 10 of the inner casing and the depending member 13. Therefore, when the inner casing 5 is pushed upward further, the cover 9 on the inner casing 5 is pivoted backward around the fold 11 by the depending member 13 and then the cover is opened at the line 16 so that the contents may be taken out of the inner casing. Thus this carton can be opened by only one motion by pushing on the bottom of the inner casing. Moreover, when the casing is to be closed, the cover 9 on the inner casing 5 is pushed downward and the tab 4 moves out of the aperture 15 in the depending member 13 and the carton can be closed smoothly. Although the cover opening device is included therein, the appearance of this carton is similar to the generally used cartons of this type and does not have an unusual form.

## EXAMPLE 2

This example has a safety device to prevent the trouble resulting from the inner casing sliding out of the outer casing. As shown in FIGURES 3, 4 and 5, on the middle of a top edge 3 of a rear panel 2 of a rectangular cylindrical shaped sleeve-like outer casing 1 is a resilient tab 4 bent downwardly against the rear panel 2. Both side panels 7 of the inner casing 5 are separated into a main side panel 8 and a cover side panel 9, and the rear panel 10 is connected at a flexible fold 11 to cover rear panel 12. Against the rear face of the rear panel 12 of the cover is a depending member 13 having its top edge

connected to the top edge of the cover rear panel 12. In the part of member 13 opposite the fold 11 when the carton is closed is a flexible fold 14, and in the part of member 13 opposite the tab 4 on the outer case 1 when the carton is opened is an aperture 15 having a similar shape but in a reverse position to tab 4. When the inner casing is pushed upward, the tab 4 enters the aperture 15, and thus the depending member 13 is restrained against upward movement which results in the bending over of the cover 9 at the fold 11 and the case is opened. At a little lower position than that of the fold 11 on the rear panel 10 of the inner casing is a resilient tab *a* cut out of panel 10 so as to be directed upwardly and hinged to the panel 10 at the bottom of tab *a*. When the carton is closed, the lower edge *b* of the depending member 13 is engaged between the rear panel 10 and the upper part of the tab *a*. When the inner casing 5 is pushed upward for opening the carton, the tab 4 extends into the aperture 15 in the depending member 13 which results in the pivoting of the cover 9 to the open position. As the bending proceeds, the rear panel 10 and the tab *a* move further toward the lower edge *b* of the depending member 13, and then are stopped from further upward movement by the bottom *a'* of the tab *a* engaging the lower edge *b* of member 13. Accordingly, not only is the rise of the inner casing stopped but also the tab 4 is not pulled too hard by the aperture 15 so that automatic opening of the case can be done safely.

If the top panel *d* of the cover in the inner casing moves down lower than the tab 4, the tab 4 moves out of contact with the rear panel of the inner case and tends to bend toward the upper edge of the outer casing due to its resiliency. Thus, when the inner casing is not pushed upward opening the carton, the tab is forced to extend upwardly from the edge of rear panel 2 and will not engage in aperture 15, and thus it cannot perform its function. In order that the upper end of the inner case does not move lower than the top edge of the outer casing, the upper panel of the cover on the inner casing 5 extends laterally at *c* a distance about the same as the thickness of the side panels 7 of outer casing 1, which extensions contact the upper edge of the side panels 7 of the outer casing when the carton is closed. Thus this device not only keeps the inner casing from moving downwardly so that the tab 4 will perform its function during opening of the carton but also prevents the inner casing from sliding down below the upper edge of the outer case.

We claim:

1. A carton having an automatically opening cover, said carton comprising an outer sleeve-like casing having an unapertured rear panel which extends the full length of the outer casing, a tab attached to the edge of the rear panel at the upper edge thereof and bent downwardly along the inside surface of the rear panel, an inner casing slidable within said outer casing and having a top panel, and at least a cover rear panel and cover side panels depending therefrom, the cover rear panel being hinged to the upper edge of the rear panel of the inner casing, and an actuating member hingedly secured to the rear edge of the cover top panel and extending downwardly between the rear panels of the inner and outer casings, said actuating member having an aperture therein at a point spaced below the edge thereof hinged to said cover top panel and in which said tab engages to stop upward movement of said inner casing relative to said outer casing when the inner casing is urged upwardly, said actuating member lying entirely within said outer casing when said inner casing is within said outer casing with the cover closed and the cover top panel level with the upper edge of the rear panel of the outer casing, whereby the cover is pivoted rearwardly on further upward movement of said inner casing relative to said outer casing.

2. A carton as claimed in claim 1 in which said cover top panel extends laterally beyond at least said depending cover side panels, whereby said extended portions rest against the upper edges of said outer casing when said inner casing is within said outer casing with the cover closed.

3. A carton as claimed in claim 1 in which said rear panel of said inner casing has a flap secured thereto and lying along the said rear panel and extending upwardly therealong, said flap being at a point spaced downwardly from the end of said actuating member when said inner casing is within the outer casing with the cover closed, whereby when the inner casing is moved upwardly within the outer casing and the cover is opened, further upward movement of the inner casing brings the flap under the lower end of said actuating member and stops still further upward movement of said inner casing.


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GEORGE O. RALSTON, *Primary Examiner.*

March 12, 1946. G. YUNGBLUT 2,396,310

RECLOSABLE CARTON

Filed April 15, 1944

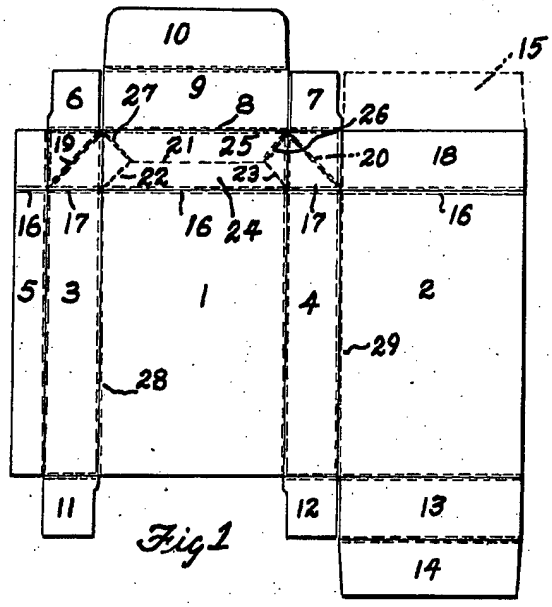


Fig. 1

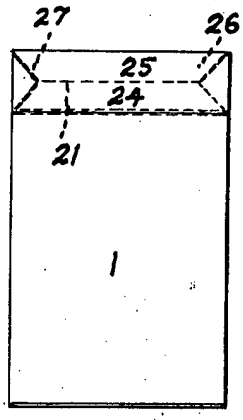


Fig. 2.

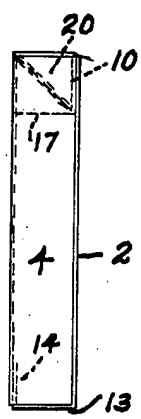


Fig. 3.

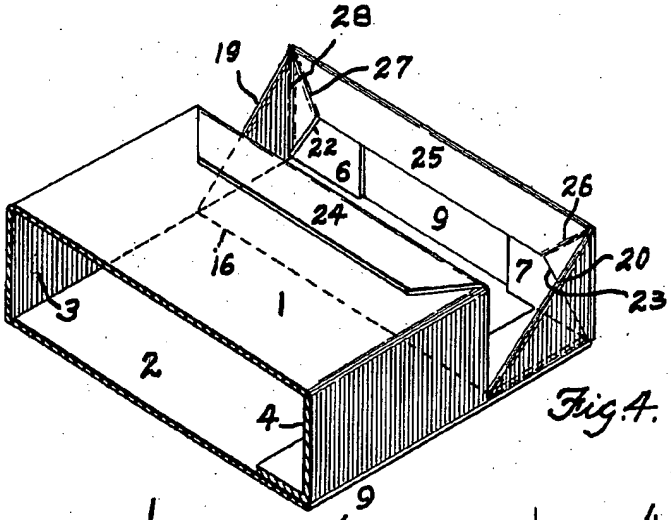


Fig. 4.

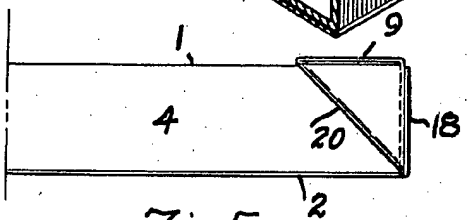


Fig. 5.

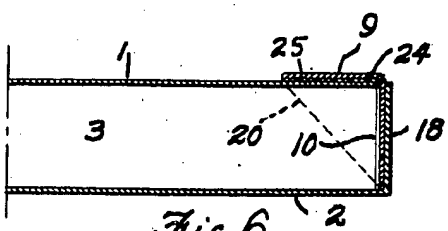


Fig. 6.

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BY Allen & Allen
Attorneys

Patented Mar. 12, 1946

2,396,310

# UNITED STATES PATENT OFFICE

2,396,310

## RECLOSABLE CARTON

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Application April 15, 1944, Serial No. 531,217

8 Claims. (Cl. 229—44)

My invention relates to cartons of the reclosable type, having a hinged lid or cover member with top and front cover walls and cover side walls in articulation or other union. The cover is foldable down over the open box end, and a means is provided for releasably retaining the cover in closed condition. This means, in its usual form, embodies an abutment on the inside of the cover front wall, and an out-turned flap on the front wall of the carton body. When the cover is closed, the edge portion of the flap engages the abutment to hold the cover in place. The cover may be opened however, in spite of this holding action; and during opening there is sufficient flexing of the walls of the carton and/or the out-turned flap itself to permit the flap to swing on its line of articulation and release the cover. Cartons of this general type have been described in the co-pending application of Williamson and Carruth, Serial No. 451,711 filed July 21, 1942, Patent No. 2,369,387, February 13, 1945 entitled Hinged cover containers.

For the most part, such cartons require a special setting up operation for the cover part, entailing commercially the use of special machines. One of the objects of this invention is to provide a carton of the type described which does not require elaborate mechanism for the setting up of the cover portion.

It is an object of this invention to provide a carton which may be manufactured and tubed as such by methods current in the art, and on the standard carton tubing or folding devices, and which can be handled during filling and closure in the same ways as are current for the filling and closure of ordinary tuck-end or seal-end tubular cartons.

It is an object of my invention to provide in such a structure for the formation of the type of closure outlined above either wholly by hand, or with very simple mechanism, and either before or after the filling and final closure of the carton.

It is an object of my invention to provide a carton which, as initially produced, is a tubed structure, but from which a cover and associated inter-engagement parts may be simply set up utilizing portions of the initial side and end walls of the box for the purpose.

It is an object of my invention thus to provide a carton having severable portions in side and end walls for the purpose described, but requiring no bodily removal of any portions to produce the ultimate form.

It is an object of my invention to provide a carton in which not only is the abutment for the cover portion formed from a portion of the carton front wall, but in which additional portions of the carton front and side walls provide a means for holding the said abutment in place with respect to the cover as will hereinafter be described.

These and other objects of my invention which will be set forth below, or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe an exemplary embodiment.

Reference is made to the accompanying drawing wherein:

Figure 1 is a plan view of a blank for my exemplary carton.

Figure 2 is a front elevation of the tubed and erected carton after closure.

Figure 3 is a side elevation thereof.

Figure 4 is a partial perspective view showing the arrangement of parts after the cover portion has been erected or set up from the structure of Figures 2 and 3, the cover portion being open.

Figure 5 is a partial side view of a completed structure with the cover closed.

Figure 6 is a longitudinal sectional view thereof.

In these figures solid lines are representative of lines of cut; a solid line with dotted lines on either side is representative of a line of score; a heavy dashed line is representative of a line of weakening in the blank upon which the blank may later be severed. The mode of formation of the line of weakening is not a limitation on this invention. It may be formed in any of the known ways, as by a line of perforations, a line of elongated or discontinuous slits, an elongated cut line, continuous except for small portions to hold the parts in initial assembly, or otherwise as may be desired.

In general, the carton comprises front and back walls 1 and 2, side walls 3 and 4, and a glue flap 5, in suitable order and articulation for tubing on conventional equipment. The ends of the side and end walls will be provided with closure flaps of any of the known types.

I have shown in Figure 1, short top side wall flaps 6 and 7, articulated to the side walls 3 and 4 along the score line 8, a top flap 9 articulated to the front wall 1, and a tuck flap 10 articulated to the top flap 9. At the bottom of the blank there are flaps 11 and 12 articulated to the side walls 3 and 4, a bottom flap 13 articulated to the back wall 2, and a tuck flap 14 articulated to the bottom flap 13. This arrangement is characteristic of standard tuck-end construction. In

standard seal-end construction the tuck flaps 10 and 14 would be eliminated, while the front wall 1 at its bottom, and the back wall 2 at its top, would carry in articulation, other flaps similar to 9 and 13, so that the box could be sealed by adhesive applied between lapping pairs of top and bottom closure flaps. A seal-end flap on the top of back wall 2 is indicated in dotted lines at 15 in Figure 1. Other forms of closure structure such as interlocking flaps, may be likewise employed.

In my carton a score line 16 is formed in the front and back walls of the carton downwardly from the upper edges of these walls by a distance substantially equal to the thickness of the carton from front wall to back wall. This distance may be slightly exceeded to facilitate the operation of the cover as will hereinafter become apparent. The score line is preferably continued across the glue flap also as shown. In line with this score the side walls 3 and 4 are provided with lines of weakening 17. The score line 16 demarks an upper portion of the back wall 2 indicated at 18. The cut lines 17 demark upper portions of the side walls 3 and 4, which portions are provided with diagonal scores 19 and 20. A cut line, or line of weakening 21, extends partially across the upper portion of wall 1, and parallel to the score lines 8 and 16. At the ends of this score line there are others, 22 and 23, connecting it diagonally with the lines of weakening 17 as shown. The cut lines 21, 22 and 23 demark a flap 24, which is articulated to the front wall 1 by score line 16, and an abutment member 25, which is articulated to the top wall 9 by score 8.

I prefer to provide a diagonal score line 26 connecting the upper right-hand corner of front wall 1 with the juncture between cut lines 22 and 23, and also a diagonal score line 27 connecting the upper left-hand corner of front wall 1 with the juncture of lines 21 and 22. These last mentioned score lines facilitate the setting up of the cover portion as will hereinafter be explained; but where the board is sufficiently thin and flexible they may be omitted.

The blank structure of Figure 1, or the variants referred to, will be tubed in the usual fashion on standard carton machinery. This is done by bending the blank along the score lines 28 and 29, adhesive having been applied to the glue flap 5, in such a manner as to adhere the glue flap inside the outer edge of back wall 2. The cartons in this form are shipped to the user.

The user erects the tubed cartons by squaring them up as is the usual practice; and the cartons may likewise be filled and closed in the usual fashion and, where available, by the usual filling and closing machinery. The openable cover portion will be set up after the closure of the top of the carton in the normal fashion. This may be done before filling, and before the closure of the bottom of the carton so that the carton may subsequently be filled through the bottom. Or it may be done after the closure of the carton at both top and bottom, and prior to the shipment of the goods in the carton. Yet again, the filled and closed carton as illustrated in Figures 2 and 3, may be shipped to the ultimate consumer who can then open the carton up by bending back the top portion thereof so as to cause the carton to part in walls 3, 1 and 4 on the cut lines or lines of weakening 17, 21, 22 and 23. Then the ultimate consumer, after using a portion of the contents of the carton (assuming it to have been completely filled), can quite simply set up the cover portion so as to make use of the reclosable feature.

In any event, the top closure is set up by fracturing or parting the carton along the cut lines 17, 21, 22 and 23. This frees the flap 24 which then can be bent over outside the front wall 1, as shown in Figure 4. The abutment member 25 is bent over on the score line 8, inside and parallel to the top wall 9. The upper portions of the side walls bend respectively on the diagonal score lines 19 and 20, folding over inside the upper side wall portions; and the adjacent articulated triangular areas of the upper portion of the front wall demarked at the left by score lines 26 and 27, and cut line 22, and at the right by score lines 29 and 26 and cut line 23 form a structure to keep the abutment 25 in the position aforesaid.

The cover is shown in completely set up but open condition in Figure 4. It is closed by bending it forwardly and upwardly on score line 16 in back wall 2, and in the glue flap. In its final closed position as illustrated in Figures 5 and 6, the top wall 9 of the carton has become the cover front wall, while the upper portion 18 of the back wall 2 has become the cover top wall. The cover side walls are triangular in conformation and have been formed from the upper portions of side walls 3 and 4. In the closed position of the cover, the edge of flap 24 engages behind the edge of abutment 25 as shown in Figure 6.

The setting up of the cover portion as described may be done wholly by hand; but it may also be done by a simple mechanical plunger device for engaging and depressing those parts of the upper portions of front wall 1 and side walls 3 and 4, which are to be disposed inwardly of the cover proper. The infolded construction which has been described serves to maintain the abutment 25 in position against the cover front wall tightly enough to prevent the flap 24 from passing behind it. Hence no other attachment of abutment 25 to wall 9 is required, although the abutment may be stapled or otherwise attached if desired.

It will be evident that the improvement may be applied to cartons of widely varying dimensions, and further that it will be within the skill of the worker in the art so to position the upper ends of the score lines demarking the front wall from adjacent side walls as to relieve the binding effect of the formed cover at the sides of the carton when it is in the position shown in Figures 5 and 6, and also so to position the score line 16 in back wall 2 as to relieve the binding effect of the ultimate cover front wall.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carton blank for the purpose described having in articulation enclosing walls and a glue flap, means at the wall ends to form end closures, a line of demarcation extending across the said walls inwardly from end portions thereof approximately the width of one of the walls, said line of demarcation in a pair of said walls being a score line and being a line of weakening in another pair of said walls, a line of weakening extending laterally in the upper portion of one of said first mentioned pair of walls and of less length, said last mentioned line of weakening being connected by other lines of weakening extending diagonally to the said score line at the edges of said wall, the demarked portions of the second mentioned pair of walls having diagonal score lines therein extending from said line of demarcation to the end

corners of said wall portion containing said intermediate line of weakening.

2. In a blank for the purpose described, a side wall, a front wall, a side wall and a back wall in articulation in the order named, together with a glue flap, means at the ends of said walls for forming closures for a carton erected from said blank, a line of demarcation extending laterally across said blank, spaced from an edge of said walls by substantially the width of said side walls, and constituting score lines in said front and back walls and lines of weakening in said side walls, said line of demarcation dividing upper portions of said walls from lower portions thereof, a line of weakening extending partially across the upper portion of said front wall intermediate said line of demarcation and the top edge of said wall, lines of weakening connecting the ends of said last mentioned line of weakening in said front wall with the said line of demarcation therein at the side edges of said wall, and diagonal score lines in the upper portions of said side walls extending from said line of demarcation at the edges of said side walls removed from said front wall to the upper corners of said side walls adjacent said front wall.

3. In a blank for the purpose described, a side wall, a front wall, a side wall and a back wall in articulation in the order named, together with a glue flap, means at the ends of said walls for forming closures for a carton erected from said blank, a line of demarcation extending laterally across said blank, spaced from an edge of said walls by substantially the width of said side walls, and constituting score lines in said front and back walls and lines of weakening in said side walls, said line of demarcation dividing upper portions of said walls from lower portions thereof, a line of weakening extending partially across the upper portion of said front wall intermediate said line of demarcation and the top edge of said wall, lines of weakening connecting the ends of said last mentioned line of weakening in said front wall with the said line of demarcation therein at the side edges of said wall, and diagonal score lines in the upper portions of said side walls extending from said line of demarcation at the edges of said side walls removed from said front wall to the upper corners of said side walls adjacent said front wall, and diagonal score lines connecting the meeting points of said lines of weakening in said front wall with the upper corners of said front wall.

4. In a blank for the purpose described, a side wall, a front wall, a side wall and a back wall in articulation in the order named, together with a glue flap, means at the ends of said walls for forming closures for a carton erected from said blank, a line of demarcation extending laterally across said blank, spaced from an edge of said walls by substantially the width of said side walls, and constituting score lines in said front and back walls and lines of weakening in said side walls, said line of demarcation dividing upper portions of said walls from lower portions thereof, a line of weakening extending partially across the upper portion of said front wall intermediate said line of demarcation and the top edge of said wall, lines of weakening connecting the ends of said last mentioned line of weakening in said front wall with the said line of demarcation therein at the side edges of said wall, and diagonal score lines in the upper portions of said side walls extending from said line of demarcation at the edges of said side walls removed from said front wall to the upper corners of said side walls adjacent said front wall, and diagonal score lines connecting the meeting points of said lines of weakening in said front wall with the upper corners of said front wall, said means for closure constituting flaps articulated to the upper and lower ends of said side walls, top and bottom flaps articulated respectively to the upper end of said front wall and the lower end of said back wall and tuck flaps articulated to said top and bottom flaps.

5. In a blank for the purpose described, a side wall, a front wall, a side wall and a back wall in articulation in the order named, together with a glue flap, means at the ends of said walls for forming closures for a carton erected from said blank, a line of demarcation extending laterally across said blank, spaced from an edge of said walls by substantially the width of said side walls, and constituting score lines in said front and back walls and lines of weakening in said side walls, said line of demarcation dividing upper portions of said walls from lower portions thereof, a line of weakening extending partially across the upper portion of said front wall intermediate said line of demarcation and the top edge of said wall, lines of weakening connecting the ends of said last mentioned line of weakening in said front wall with the said line of demarcation therein at the side edges of said wall, diagonal score lines in the upper portions of said side walls extending from said line of demarcation at the edges of said side walls removed from said front wall to the upper corners of said side walls adjacent said front wall, and diagonal score lines connecting the meeting points of said lines of weakening in said front wall with the upper corners of said front wall, said means of closure comprising seal end flaps articulated respectively to the ends of said walls.

6. A tubed carton structure comprising body walls in articulation and means at the ends of the body walls for forming closures for the tubed structure, a line for severance extending about certain of said walls, and in an opposite pair of said walls lying at a distance from the top of the carton substantially equivalent to a transverse dimension of said carton, said line for severance being configured in an intermediate wall to provide a flap of less width than said dimension turnable outside said wall and an abutment means turnable inside the top closure of said carton, additional walls being scored above said line of severance to provide portions for infolding, which portions are connected with said abutment means, and when infolded serve to retain said abutment means inwardly against said top closure of said carton.

7. A tubed carton comprising a plurality of body walls in articulation, and means at the ends of said body walls to provide closures for said carton, said carton having a line of demarcation running about said body walls and spaced from the ends thereof a distance substantially equivalent to one transverse dimension of the erected carton, said line of demarcation comprising a score line in two of said walls and lines for severance in other walls, one of said scored walls having a line of weakening intermediate said line of demarcation and the upper edge thereof, said line of weakening being less in length than the width of said wall, and connected at its ends with the edges of said wall at said line of demarcation by additional lines of weakening, a top portion of said carton being severable along said lines of weak-

ening from the remainder thereof excepting in one of the said scored walls so as to provide a hinged cover, the disposition of said lines of weakening as aforesaid being such as to leave upon the opposite wall a flap bendable outwardly and to leave upon the cover an abutment member bendable inwardly, together with adjacent articulated portions of the same and other walls bendable inwardly to maintain said abutment means in folded position.

8. In a tubed carton, front, back and side walls in articulation, a closure at each end of the said tubed structure forming top and bottom walls respectively, the front and side walls terminating short of the top wall, an outwardly turned flap at the top edge of the front wall, cover wall portions integral with said top wall structure at front and side edges thereof, a portion of said wall at the front edge thereof being turned inwardly to form an abutment, and additional wall portions at the front and side edges of said top wall structure and integral with said abutment being turned inwardly to maintain said abutment in folded position.

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partie basculante 37 à la partie courante 38 suffit au maintien en position de fermeture de cette partie basculante 37 sur cette partie courante 38.

Mais, lorsque, suivant la flèche F de la figure 8, une sollicitation de pivotement est appliquée à la partie basculante 37, becs et découpes échappent sensiblement élastiquement les uns aux autres, à la manière de moyens d'encliquetage, ce qui permet à ladite partie basculante 37 de se dégager effectivement de ladite partie courante 38, tel que schématisé en traits interrompus sur cette figure 8.

Un retour en position de fermeture de la partie basculante 37 est cependant possible, les opérations correspondantes étant réversibles.

Pour le reste, et à la différence des dispositions décrites dans le brevet principal, aucune découpe n'est prévue dans le panneau central 27 du couvercle 13, ce qui libère la totalité de celui-ci pour d'éventuelles impressions, et, en bordure de la ligne d'ouverture 39, le couvercle 14 ne présente qu'une découpe 35 formant onglet, celle-ci étant alors établie à mi-distance des panneaux de côté longitudinaux 29A correspondants.

La flèche, limitée, de cette découpe 35 formant onglet est en pratique établie de manière à ce que la patte 35' qui en résulte pour la partie courante 38 ne soit pas en mesure, lors du pivotement de la partie basculante 37 autour de sa ligne charnière 22, d'interférer avec les portions 10 contenues dans cette partie basculante 37.

Bien entendu, la présente invention ne se limite pas à la forme de réalisation décrite et représentée, mais englobe toute variante d'exécution.

En particulier, au lieu de n'être prévue que sur les seuls panneaux de côté longitudinaux du corps de l'emballage, la ligne de démarcation délimitant les moyens d'encliquetage débrayables suivant l'invention

pourrait aussi bien affecter également les panneaux de côté longitudinaux du couvercle rapporté sur ce corps.

Dans un tel cas une telle ligne de démarcation se confond avec la totalité du tronçon correspondant de la ligne d'ouverture et non pas avec la seule portion de ce tronçon intéressant les seuls panneaux de côté longitudinaux du corps de l'emballage.

En variante la ligne de démarcation pourrait n'affecter que les seuls panneaux de côté longitudinaux du couvercle.

Elle pourrait aussi n'être prévue que sur un seul panneau de côté longitudinal, que celui-ci appartienne au corps ou au couvercle ou qu'il s'agisse d'un panneau de côté longitudinal de l'ensemble.

Bien entendu, dans le cas, au moins où une telle ligne de démarcation n'intéresse que le corps ou que le couvercle, il n'est pas prévu de colle à proximité d'elle entre ce corps et ce couvercle, pour que celle des portions d'emboîtement qui, ainsi formées sur l'un des éléments que constitue ce corps ou ce couvercle, appartient à la partie basculante de l'ensemble, puisse effectivement jouer librement par rapport à l'autre de ces éléments lors du pivotement de cette partie basculante, et donc en autoriser effectivement l'ouverture.

l'autre (53) qui appartient à sa partie basculante (37).

3. Emballage suivant la revendication 2, caractérisé en ce que le panneau de côté longitudinal (19A) comportant la ligne de démarcation (51) appartient au seul corps (13) et cette ligne de démarcation (51) se confond avec la ligne d'ouverture (39) pour la portion (23) de celle-ci intéressant ce panneau de côté longitudinal (19A).

4. Emballage suivant l'une quelconque des revendications 2, 3, caractérisé en ce que, le long de la ligne de démarcation (51), un point de rétention déchirable (24), au moins, relie la partie basculante (37) à la partie courante (38) à laquelle elle est associée.

5. Emballage suivant l'une quelconque des revendications 2 à 4, caractérisé en ce que l'un et l'autre de deux panneaux de côté longitudinaux opposés (19A) comportent une ligne de démarcation (51) y formant des moyens d'encliquetage débrayables (50).

6. Flan suivant la revendication 7 du brevet principal, caractérisé en ce qu'il est propre à la constitution du corps (13) d'un emballage (12) suivant l'une quelconque des revendications 2 à 5.

7. Flan suivant la revendication 10 du brevet principal, caractérisé en ce qu'il est propre à la constitution du couvercle (14) d'un emballage (12) suivant l'une quelconque des revendications 2 à 5.

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FIG.1

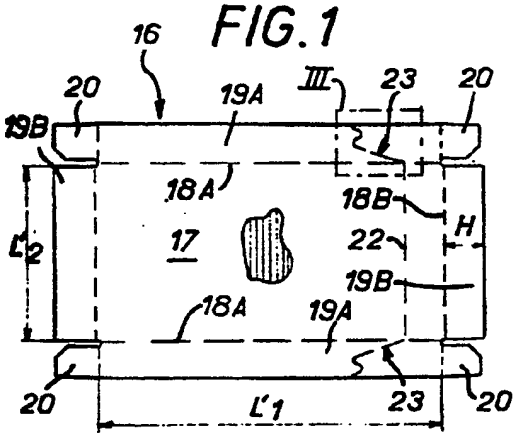



FIG.2

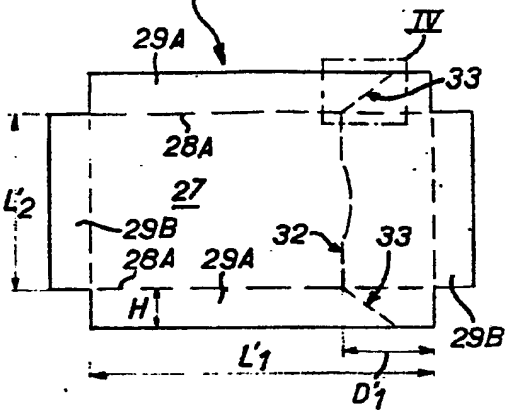



FIG.5

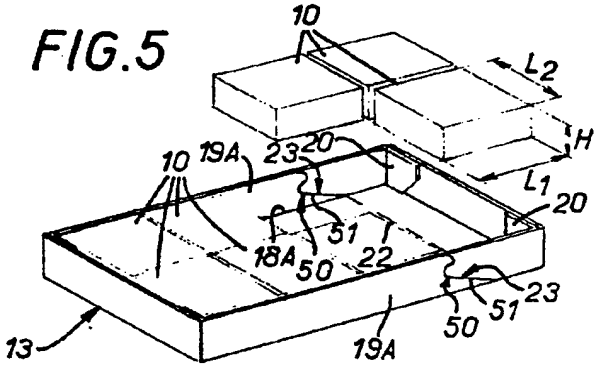



FIG.3

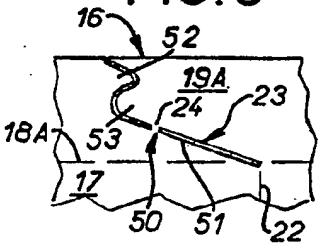



FIG.4

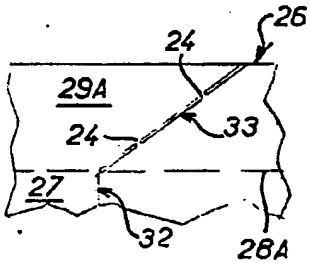



FIG.6

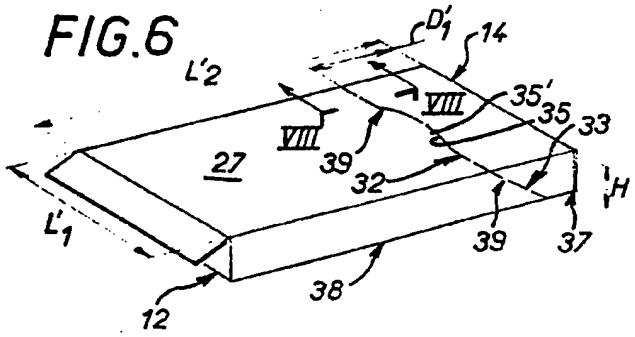



FIG.7

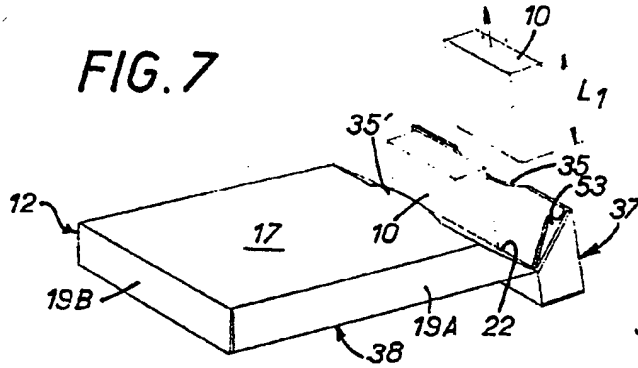
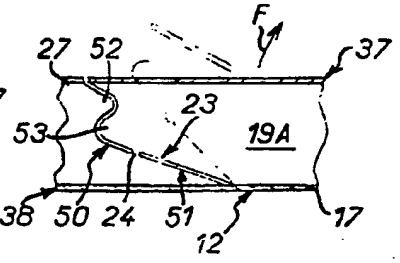



FIG.8



DERWENT-ACC-NO: 1987-336727
DERWENT-WEEK: 198748


TITLE: Parallelepiped packaging for products in identical portions - has liq. pivoting open by amount corresponding to portion size

INVENTOR: LAZERAND, J

PATENT-ASSIGNEE: HUGUES NICOLLET SA [HUGUN]

PRIORITY-DATA: 1986FR-0004761 (April 3, 1986) , 1985FR-0016584 (November 8, 1985)

PATENT-FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
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| FR 2596730 A | October 9, 1987 | N/A | 013 | N/A |

APPLICATION-DATA:

| PUB-NO | APPL-DESCRIPTOR | APPL-NO | APPL-DATE |
|---|---|---|---|
| FR 2596730A | N/A | 1986FR-0004761 | April 3, 1986 |

INT-CL_(IPC): B65D005/66
ABSTRACTED-PUB-NO: FR 2596730A

BASIC-ABSTRACT:
The packaging has a rocking part (37) which is articulated to its main part (38) via a hinge line (22) on its back. The opening line extends across the packaging, faces the hinge line, and is spaced from the closest packaging transversal end by a distance equal to a dimension (L1) of the product portion so that the rocking part forms a product distributer.

There is a ratcheting device that can be uncoupled that is provided locally between the packaging rocking part and its main part.

USE - In the food supply industry.

CHOSEN-DRAWING: Dwg.7/8

DERWENT-CLASS: Q32

CLIPPEDIMAGE= FR002596730A2
PUB-NO: FR002596730A2
DOCUMENT-IDENTIFIER: FR 2596730 A2
TITLE: Parallelepipedal packaging for a product in portions, and corresponding blanks
PUBN-DATE: October 9, 1987
INVENTOR-INFORMATION:

| NAME | COUNTRY |
|---|---|
| LAZERAND, JEAN | N/A |

ASSIGNEE-INFORMATION:

| NAME | COUNTRY |
|---|---|
| NICOLLET HUGUES SA | FR |

APPL-NO: FR08604761
APPL-DATE: April 3, 1986
PRIORITY-DATA: FR08604761A (April 3, 1986)
INT-CL (IPC): B65D005/42
EUR-CL (EPC): B65D005/42; B65D005/54, B65D005/72
US-CL-CURRENT: 229/160.1

ABSTRACT:
As described in the main patent, this refers to packaging which, intended for packing contents subdivided into identical portions 10, has a tilting part 37 articulated by a hinge line 22 on a straight part 38 and thus suitable for forming a dispenser for these portions 10.

According to the invention, disengageable catch-fastening means, having a projecting portion or portions in the form of a nose 53, are provided between the tilting part 37 and the straight part 38.

Application, especially, to the packaging of food products and, for example, processed cheese for spreading. <IMAGE>

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